ISSN 2467-0715



JRC SCIENCE FOR POLICY REPORT

Scientific Technical and Economic Committee for Fisheries (STECF) – Stock assessments in the Western Mediterranean Sea 2026 (STECF 26-09)

Final report pending publication numbers for webpage release

E. Jardim, A. Ligas & D. Mantopoulou Palouka (eds.)

2026

Joint Research Centre

EUR 28359 EN

This publication is a Science for Policy report by the Joint Research Centre (JRC), the European Commission's science and knowledge service. It aims to provide evidence-based scientific support to the European policymaking process. The contents of this publication do not necessarily reflect the position or opinion of the European Commission. Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use that might be made of this publication. For information on the methodology and quality underlying the data used in this publication for which the source is neither Eurostat nor other Commission services, users should contact the referenced source. The designations employed and the presentation of material on the maps do not imply the expression of any opinion whatsoever on the part of the European Union concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Contact information
Name: STECF secretariat
Address: Unit D.02 Ocean and Water, Via Enrico Fermi 2749, 21027 Ispra VA, Italy
Email: jrc-stecf-secretariat@ec.europa.eu
Tel.: +39 0332 789343

EU Science Hub
https://joint-research-centre.ec.europa.eu

Luxembourg: Publications Office of the European Union, 2026

© European Union, 2026



The reuse policy of the European Commission is implemented by the Commission Decision 2011/833/EU of 12 December 2011 on the reuse of Commission documents (OJ L 330, 14.12.2011, p. 39). Except otherwise noted, the reuse of this document is authorised under the Creative Commons Attribution 4.0 International (CC BY 4.0) licence (https://creativecommons.org/licenses/by/4.0/). This means that reuse is allowed provided appropriate credit is given and any changes are indicated. For any use or reproduction of photos or other material that is not owned by the EU, permission must be sought directly from the copyright holders.

For any use or reproduction of photos or other material that is not owned by the European Union, permission must be sought directly from the copyright holders.

How to cite this report: European Commission, Joint Research Centre, *Scientific, Technical and Economic Committee for Fisheries (STECF) – Stock Assessment in the Western Mediterranean Sea (STECF-26-09).*

CONTENTS

Abstract 4
STECF Report on EWG 26-09 5
Request to STECF 5
Summary of EWG 26-09 5
STECF comments 14
STECF conclusions 17
Contact details of STECF members 19
Expert Working Group EWG-26-09 report 23
1. Introduction 24
Terms of Reference for EWG-26-09 24
2 Overview 27
2.1 Quality of the assessment 31
2.2 Reference Points 34
3 Summary Sheets 36
3.1 Summary sheet for European hake in GSAs 1, 5, 6, 7 36
3.2 Summary sheet for Deep water rose shrimp in GSA 1 45
3.3 Summary sheet for Deep water rose shrimp in GSAs 5, 6, 7 51
3.4 Summary sheet for Red mullet in GSA 1 58
3.5 Summary sheet for Red mullet in GSA 6 66
3.6 Summary sheet for Red mullet in GSA 7 74
3.7 Summary sheet for Norway lobster in GSA 5 81
3.8 Summary sheet for Norway lobster in GSA 6 88
3.9 Summary sheet for European hake in GSAs 8, 9, 10, 11 96
3.10 Summary sheet for Deep water rose shrimp in GSAs 8, 9, 10, 11 107
3.11 Summary sheet for red mullet in GSA 9 115
3.12 Summary sheet for Red mullet in GSA 10 121
3.13 Summary sheet for Norway lobster in GSA 9 129
3.14 Summary sheet for Norway lobster in GSA 11 137
3.15 Summary sheet for blue and red shrimp in GSAs 1, 2 146
3.16 Summary sheet for Blue and red shrimp in GSA 5 153
3.17 Summary sheet for Blue and red shrimp in GSAs 6, 7 162
3.18 Summary sheet for Blue and red shrimp in GSA 8, 9, 10, 11 171
3.19 Summary sheet for Giant red shrimp in GSA 8, 9, 10, 11 180
4 Data Issues 189

5 References 194
Contact details of EWG 26-09 participants 196
List of Figures 199
List of Tables 202
6 Annexes 209
Methods 209
6.1 List of Annexes 216
6.2 List of Background Documents 216

Authors

STECF advice:

Ballesteros, Marta; Bastardie, Francois; Casey, John; Colaço, Ana; Cuende de Francisco, Elsa; Döring, Ralf; Drouineau, Hilaire; Grati, Fabio; Griffiths, Christopher; Hidalgo, Manuel; Ibaibarriaga, Leire; Jackson, Emmet; Jardim, Ernesto; Jung, Armelle; Lucchetti, Alessandro; Mannini, Alessandro; Moore, Claire; Motova-Surmava, Arina; Nimmegeers, Sofie; Orio, Alessandro; Pinto, Cecilia; Prellezo, Raúl; Raid, Tiit; Russo, Tommaso; Sabatella, Evelina Carmen; Savina-Rolland, Marie; Spedicato, Maria Teresa; Steins, Nathalie; Stransky, Christoph; Tserpes, George; Ulrich, Clara; Uriarte, Andres; Uusitalo, Laura; Valentinsson, Daniel

EWG-26-09 report:

EWG chairs: Ernesto Jardim and Alessandro Ligas

Experts: Allegretti Francesco, Armelloni Enrico Nicola, Caballero Luján Guillermo,Certain Gregoire, Chiarini Matteo, Costantini Ilaria, Couve Pablo, Drouineau Hilaire, Gamito Jardim Jose Ernesto, García Encarni, Murenu Matteo, Musumeci Claudia, Palermino Antonio, Panisello Garriga Mariona, Perez-Rodriguez Alfonso, Pesci Paola, Pierucci Andrea, Scanu Martina, Tifoura Amina.

JRC Experts: Ligas Alessandro, Mantopoulou Palouka Danai, Rincon Hidalgo Margarita

Abstract

Commission Decision of 25 February 2016 setting up a Scientific, Technical and Economic Committee for Fisheries, C(2016) 1084, OJ C 74, 26.2.2016, p. 4–10. The Commission may consult the group on any matter relating to marine and fisheries biology, fishing gear technology, fisheries economics, fisheries governance, ecosystem effects of fisheries, aquaculture or similar disciplines.

This report documents the outcomes of STECF Expert Working Group 26-09 on stock assessments of demersal stocks in the Western Mediterranean Sea, which took place between the 29th August and 4th September 2026. A total of 19 fish stocks have been considered, and 14 stocks were evaluated with the statistical catch at age a4a modelling framework. For MUT9 and ARA12, none of the model settings tried was able to provide acceptable results, therefore a biomass index-based advice is given applying ICES Category 3 methodology. For the stocks of DPS1, DPS567 and MUT7 no advice was provided as the models cannot fully explain the dynamics of these stocks, in particular the estimation of stock-recruitment relationships and reference points. The content of the report gives the STECF terms of reference; the basis of the evaluations; assessments, reference point calculations; summaries of state of stock and advised catch or F based on either the MSY approach for assessed stocks and category 3 based advices for those without assessments. The report contains the full stock assessment reports as electronic annexes, the exploration of assessments and ICES category 3 evaluations for the remaining stocks. The report also contains the STECF observations and conclusions on the assessment report, approved during STECF's mini plenary meeting on the 19-20 of October 2026.

STECF Report on EWG 26-09

Request to STECF

STECF is requested to evaluate the findings of the STECF Expert Working Group (including the ad hoc contract for validation of F_{upper}) and make any appropriate comments and recommendations in view of its publication.

Summary of EWG 26-09

The working group met in hybrid format at the JRC premises in Ispra, Italy from 29 August to 4 September 2026. The meeting was attended by 22 experts in total, including two STECF members and three JRC experts. One observer participated online. The objective of the EWG was to carry out stock assessments and provide reference points for demersal stocks in the Western Mediterranean, as well as to deliver short-term forecasts for red shrimp stocks (Blue and red shrimp, and giant red shrimp). In addition, the EWG initiated the work to test F_{upper} for the most vulnerable stock (MVS) in each Effort Management Unit (EMU). This task was completed through an ad hoc contract (no. 2689), which was annexed to the EWG 26-09 report.

1. Basis for advice on stock status

A total of 19 stocks (area/species combinations) were assessed. Fourteen stocks were evaluated by means of a statistical catch-at-age model (a4a, Assessment for all), four of which were assessed for the first time. Index-based advice (ICES Category 3) was provided for two stocks, while no advice was provided for three other stocks (Table 1).

Table 1 Summary of the work attempted and basis for advice in 2025 and 2026 assessments. a4a: a statistical catch-at-age model.

Area	Species	Code	EWG 25-09	EWG 26-09
1_5_6_7	Hake	HKE	a4a	a4a
1	Deep-water rose shrimp	DPS	No advice	No advice
5_6_7	Deep-water rose shrimp	DPS	No advice	No advice
1	Red mullet	MUT	a4a	a4a
6	Red mullet	MUT	a4a	a4a
7	Red mullet	MUT	No advice	No advice
5	Norway lobster	NEP	ICES Category 3	a4a
6	Norway lobster	NEP	a4a	a4a
8_9_10_11	Hake	HKE	a4a	a4a
8_9_10_11	Deep-water rose shrimp	DPS	a4a	a4a
9	Red mullet	MUT	a4a	ICES Category 3
10	Red mullet	MUT	ICES Category 5	a4a

9	Norway lobster	NEP	a4a	a4a
11	Norway lobster	NEP	a4a	a4a
1_2	Blue and red shrimp	ARA	a4a	ICES Category 3
5	Blue and red shrimp	ARA	ICES Category 3	a4a
6_7	Blue and red shrimp	ARA	a4a	a4a
8_9_10_11	Blue and red shrimp	ARA	ICES Category 5	a4a
8_9_10_11	Giant red shrimp	ARS	a4a	a4a

Source: Own elaboration based on EWG 26-09 report.

2. Main changes compared with the 2025 assessment

Compared to 2025 (EWG 25-09), new stock assessments based on a4a were provided for blue and red shrimp in Geographical Sub-Area (GSA) 5 and Norway lobster in GSA 5 in EMU 1, and for red mullet in GSA 10 and blue and red shrimp in GSAs 8_9_10_11 in EMU 2. The advice produced in EWG 25-09 for Norway lobster and blue and red shrimp in GSA 5 was based on ICES Category 3 approach, whereas advice for red shrimp in GSAs 8_9_10_11 and red mullet in GSA 10 was based on the ICES Category 5 approach. EWG 26-09 validated the new stock assessments and considered them suitable for providing advice. However, given their recent development, EWG 26-09 suggested waiting until next year before considering the advice fully consolidated.

In contrast, for red mullet in GSA 9 and blue and red shrimp in GSAs 1_2 for which last year's advice was based on a4a, none of the tested model settings produced acceptable diagnostics. In both cases, the abundance index showed high interannual variability, and although the model fit was adequate, the retrospective analysis indicated unreliable results. Consequently, advice for these stocks was based on the ICES Category 3 approach.

The three stocks for which no advice was provided were the same as in 2025, namely, deep-water rose shrimp in GSA 1, deep-water rose shrimp in GSAs 5_6_7 and red mullet in GSA 7. The stock assessment models (a4a) performed well in terms of cohort consistency, model diagnostics and retrospective patterns. However, the three stocks continued showing very high increases in productivity, with recruitment, catches and biomass increasing in recent years. EWG 26-09 considered that the models still did not adequately explain the stock dynamics and therefore did not provide advice.

Finally, striped red mullet in GSA 5 was not included in the list of suggested stocks given in the ToRs for the EWG. Therefore, no work was carried out for this stock. The reduction of the number of stocks to be assessed allowed the update of the F_{MSY} ranges for the MVSs to be initiated during the stock assessment EWG, as suggested by PLEN 26-02.

3. Changes in reference points

The reference points were re-evaluated for all the stocks with analytical assessments to account for potential changes in the input data (e.g., biological parameters, slicing procedures, etc.) and in the model settings (e.g., submodel configurations). However, they were updated only when the values adopted in EWG 25-09 fell outside the 95% confidence intervals of the empirical distributions obtained from the 2026 assessments.

As a result of the procedure above, of the 14 analytical assessments, reference points for five stocks (hake in GSAs 8_9_10_11, deep-water rose shrimp in GSAs 8_9_10_11, Norway lobster in GSA 9, Norway lobster in GSA 11 and giant red shrimp in GSAs 8_9_10_11) were updated. For a further four stocks (blue and red shrimp in GSA 5, Norway lobster in GSA 5, red mullet in GSA 10 and blue and red shrimp in GSAs 8_9_10_11) reference points were presented based on new stock assessments. For the remaining five stocks the reference points established by EWG 25-09 were retained.

For the two Category 3 stocks (red mullet in GSA 9 and blue and red shrimp in GSAs 1_2) only the index trigger value ($I_{trigger}$) was calculated.

4. Summary of the results of the 2026 assessments

The main results of the EWG are summarized in the bullet point list below and in Table 2.

- European hake in GSA 1_5_6_7: Catches show a decreasing trend from 2009 to 2020, with some oscillations in the time series since then. Fishing mortality has been reduced over the last three years, but it is still above F_{MSY}. SSB shows a slow increasing pattern since 2020. SSB at the beginning of 2026 was estimated to be above B_{lim} but below B_{pa}.
- Deep-water rose shrimp in GSA 1: No advice was given because the dynamics of the stock are not fully explained by the stock assessment. Catches and abundance indices have been increasing in recent years due to the increasing productivity of the stock.
- Deep-water rose shrimp in GSA 5_6_7: No advice was given because the dynamics of the stock are not fully explained by the stock assessment. Catches and abundance indices have been increasing in recent years due to the increasing productivity of the stock.
- Red mullet in GSA 1: Catches have fluctuated throughout the time series, showing a slight decreasing trend in recent years. Since 2017, fishing mortality has decreased and biomass increased. In 2025, SSB is above B_{pa}, although fishing mortality remains above F_{MSY}.
- Red mullet in GSA 6: Catches have fluctuated throughout the time series, with a slight declining trend since 2016. Biomass shows an increasing trend along the time series. In 2025, SSB is above B_{pa}, although fishing mortality is above F_{MSY}.
- Red mullet in GSA 7: No advice was given because the dynamics of the stock are not fully explained by the stock assessment. Catches and abundance indices have increased almost continuously throughout the time series.
- Norway lobster in GSA 5: Catches have declined since 2018. From 2017 to 2022 the stock has been decreasing but has kept stable since then. Biomass in 2025 is between B_{lim} and B_{pa}, while fishing mortality in 2025 is above F_{MSY}.
- Norway lobster in GSA 6: Catches have been stable over the last years. SSB decreased until 2019 and has remained stable in recent years, being slightly above B_{lim} but below B_{pa} in 2025. Fishing mortality has fluctuated along the time series, with a sharp reduction in 2020 followed by relatively stable values until 2024. Fishing mortality in 2025 has increased again, being almost three times larger than F_{MSY}.

- European hake in GSA 8_9_10_11: Catches show a decline trend throughout the time series. Similarly, biomass has progressively declined throughout the entire time-series. SSB at the beginning of 2026 is above B_{lim} and below B_{pa}. Fishing mortality reached its lowest value in 2025, although still above F_{MSY}.
- Deep-water rose shrimp in GSA 8_9_10_11: Catches increased to a maximum in 2019 and declined thereafter. SSB increased to a maximum in 2018. It subsequently declined and increased again in 2025. Biomass in 2025 is estimated to be above B_{MSY}. Fishing mortality in 2025 is below F_{MSY}.
- Red mullet in GSA 9: The ICES framework for category 3 stocks was applied following the constant harvest rate rule with a multiplier m=0.5. Fishing pressure proxy on the stock is above the HR_{MSY} proxy and the stock-size index is also above $I_{trigger}$. Catches in 2027 should not be above 520 tonnes.
- Red mullet in GSA 10: Catches show a decreasing trend in the most recent period. SSB decreased from 2018 to 2023 and remained stable in the last two years, being above B_{lim} but below B_{pa} in 2025. Fishing mortality has been decreasing in the last five years. Fishing mortality in 2025 is above F_{MSY}.
- Norway lobster in GSA 9: Catches show a decreasing pattern until 2015, then they fluctuated around 150 tonnes. SSB follows a similar decreasing trend until 2020, followed by an increase in the most recent years. SSB in 2025 is above B_{lim} but below B_{pa}. Fishing mortality has declined since 2019, but it is still above F_{MSY} in 2025.
- Norway lobster in GSA 11: Catches show a fluctuating pattern over the period, with an overall decreasing trend since 2018. Biomass declined until 2022, followed by a slight increase in recent years. SSB in 2025 is above B_{lim} but below B_{pa}. Fishing mortality in 2025 is above F_{MSY}.
- Blue and red shrimp in GSA 1_2: The ICES framework for Category 3 stocks was applied following the constant harvest rate rule with a multiplier m=0.5. Fishing pressure proxy on the stock is below the HR_{MSY} proxy and the stock-size index is above $I_{trigger}$. Catches should not be above 108 tonnes in 2027.
- Blue and red shrimp in GSA 5: Catches show large fluctuations throughout the time series. SSB is also fluctuating, with a slight increasing pattern in the most recent period. SSB in 2025 is above B_{pa} and below B_{MSY}. Fishing mortality reached its maximum in 2019 but has been decreasing in the last three years. Fishing mortality in 2025 is above F_{MSY}. Fishing at F_{MSY} for this stock would result in a catch of 125 tonnes in 2027.
- Blue and red shrimp in GSA 6_7: Catches peaked between 2010 and 2015, followed by a declining trend in subsequent years. SSB is quite stable over the whole time series, with an upward trend over the last five years. In contrast, F fluctuated before declining over the same period. Fishing mortality in 2025 is above F_{MSY}, whereas SSB in 2025 is above B_{pa} and below B_{MSY}. Fishing at F_{MSY} for this stock would result in a catch of 529 tonnes in 2027.
- Blue and red shrimp in GSA 8_9_10_11: Catches have exhibited three distinct peaks in 2005, 2018, and 2019, followed by a declining trend in recent years. SSB has been fluctuating throughout the time series, with a slight increasing trend over the last two

years. SSB in 2025 is above B_{pa} and below B_{MSY}. In contrast, fishing mortality has declined since 2019, with fishing mortality in 2025 being above F_{MSY}. Fishing at F_{MSY} for this stock would result in a catch of 184 tonnes in 2027.

- Giant red shrimp in GSA 8_9_10_11: Catches fluctuated throughout the time series but remained relatively stable during the last two years. SSB has had an overall decreasing trend since 2017, being above B_{pa} and below B_{MSY} in 2025. Fishing mortality has decreased gradually since 2022. Fishing mortality in 2025 is slightly above F_{MSY}. Fishing at F_{MSY} for this stock would result in a catch of 419 tonnes in 2027.

Table 2 Summary of advice and stock status by area and species from EWG 26-09. Official catch corresponds to total catch (landings and discards) reported in the Mediterranean and Black Sea data call, whereas modelled catch is estimated in the stock assessment. Stock status is provided as F over F_{MSY} (or its proxy), SSB over B_{lim} and SSB over B_{pa}. For stocks that spawn in the beginning of the year (hake in GSAs 1_5_6_7 and hake in GSAs 8_9_10_11), SSB and the SSB ratios refer to 2026. For blue and red shrimp and for giant red shrimp catch in 2027 is based on fishing at F_{MSY} in 2027.

Area	Species	Official catches 2025	Modelled catches 2025	SSB 2025	F 2025	F_{MSY} proxy	F/F_{MSY}	B_{lim}	SSB/B_{lim}	Bpa	SSB/B_{pa}	Catch 2027	SSB 2028	SSB/B_{MSY} 2028	SSB/B_{pa} 2028	SSB/B_{lim} 2028
1_5_6_7	Hake	3211	3260	4233^	1.17	0.61	1.92	3242	1.31^	6484	0.65^					
1	Deep-water rose shrimp	1458											*No advice*			
5_6_7	Deep-water rose shrimp	2289											*No advice*			
1	Red mullet	102	141	196	0.82	0.59	1.39	75	2.61	150	1.31					
6	Red mullet	1207	1269	1805	1.04	0.76	1.37	481	3.75	962	1.88					
7	Red mullet	408											*No advice*			
5	Norway lobster	19	20	88	0.17	0.12	1.38*	51	1.73	101	0.87					
6	Norway lobster	182	210	230	0.86	0.29	2.97	217	1.06	433	0.53					
8_9_10_11	Hake	1190	1316	4161^	0.62	0.47	1.33	3277	1.27^	6554	0.63^					
8_9_10_11	Deep-water rose shrimp	1379	1361	813	1.21	1.34	0.90	185	4.39	370	2.20					
9	Red mullet	467										520	*No advice*			
10	Red mullet	197	232	404	0.60	0.28	2.07*	268	1.51	534	0.76					

9	Norway lobster	122	124	388	0.25	0.14	1.73*	243	1.60	486	0.80					
11	Norway lobster	28	28	41	0.37	0.18	2.09*	26	1.58	53	0.77					
1_2	Blue and red shrimp	153										108	*No Advice*			
5	Blue and red shrimp	128	137	153	1.04	0.61	1.73*	64	2.39	128	1.20	125	207	0.81	1.62	3.25
6_7	Blue and red shrimp	413	434	627	0.66	0.54	1.23	225	2.79	450	1.39	529	906	0.89	2.01	4.03
8_9_10_11	Blue and red shrimp	163	159	474	0.45	0.40	1.12*	174	2.72	347	1.37	184	628	0.90	1.81	3.61
8_9_10_11	Giant red shrimp	303	313	537	0.51	0.49	1.04	154	3.49	309	1.74	419	646	1.05	2.09	4.19

*The exploitation level (F/F_{MSY}) is estimated as the median of the empirical distribution of the ratio. In these cases, the median of the empirical distribution of the ratio may not be numerically equal to the ratio of the medians of the empirical distributions of F_{2025} and F_{MSY}.

^SSB in 2026 for the stocks that spawn at the beginning of the year (HKE_1_5_6_7 and HKE_8_9_10_11).

Source: Own elaborations based on EWG 26-09.

Legends:

	SSB below B_{pa}
	SSB below B_{lim}
	F below F_{MSY} (or its proxy)
	Most vulnerable stock

5. Most vulnerable stock in each EMU

According to the West Med MAP (EU Regulation 2019/1022), the MVS in each EMU is defined as “the stock for which, at the time of the setting of the maximum allowable fishing effort, the fishing mortality of the previous year is the furthest from the F_{MSY} point value determined in the best available scientific advice”. Based on the stock assessment results from EWG 26-09, the MVSs were: Norway lobster in GSA 6 in EMU 1 (F_{2025}/F_{MSY}=2.97) and Norway lobster in GSA11 in EMU 2 (F_{2025}/F_{MSY}=2.09).

6. F_{upper} for MVS in each EMU

The work initiated during the EWG to test F_{upper} for the MVS in each EMU (ToR 3 of EWG 26-09) was finalized through an ad hoc contract annexed to the EWG 26-09 report. The procedure followed was as follows:

First, based on the latest stock assessment results and following the methodology developed by EWG 24-02, candidate values of F_{upper} were calculated. For Norway lobster in GSA 6, the candidate F_{upper} was 0.43. This value, previously calculated by EWG 24-02, was obtained by capping the unconstrained F_{upper} (0.47) derived from the production curve at $F_{p.05}$, ensuring that the probability of the stock falling below B_{lim} does not exceed 5%. Alternatively, for Norway lobster in GSA 11, which was not analysed by EWG 24-02, the candidate F_{upper} was estimated under the ad hoc contract. As the equilibrium production curve did not have a well-defined maximum, the candidate F_{upper} (0.24) was derived from the empirical relationships established by EWG 15-09, using the $F_{0.1}$ estimate from EWG 26-09 as a proxy for F_{MSY}.

Then, for each stock, a grid of F values from 0 to 0.8, including F_{MSY} (or its proxy) and the candidate F_{upper} values, was evaluated using a full-feedback loop Management Strategy Evaluation (MSE) approach similar to that applied by EWG 26-03 to assess the stability of B_{lim}. Overall performance was assessed in terms of fishing mortality relative to the target (F/F_{MSY}), catch relative to MSY yield (catch/MSY), biomass relative to the target (B/B_{MSY}) and interannual variation in catch, while precautionary compliance was assessed based on whether the maximum annual probability of SSB being below B_{lim} (risk3) remained below 0.05. Results indicated that the candidate F_{upper} values for both stocks satisfied the specified long-term precautionary risk criterion while maintaining catches close to the estimated MSY level. The precautionary ceiling was breached at fishing mortality levels around F=0.78 for Norway lobster in GSA 6, whereas the buffer was narrower for Norway lobster in GSA 11 (F=0.55). However, both stocks presented key differences regarding stock typology and reference points. Norway lobster in GSA 6 showed the characteristics of a Type 1 stock with F_{upper} yielding catches around 97% of MSY, but with F/F_{MSY} around 1.5 and B/B_{MSY} around 0.75. In contrast, Norway lobster in GSA 11 showed an ill-defined production maximum. The use of $F_{0.1}$ as a proxy for F_{MSY} together with F_{upper} based on the empirical relationship, resulted in catches at F_{upper} slightly larger than MSY (C/MSY around 1.08) with F/F_{MSY} being around 1.4 and B/B_{MSY} around 0.75.

Finally, the ad hoc contract highlighted the need for caution, as several simulated trajectories projected SSB and F beyond the range of historically observed values.

7. Data issues

As in 2025, data preparation was carried out before the EWG through ad hoc contracts issued to the experts. All data issues found and their potential impact on the quality and reliability of the stock assessments are described in sections 2.1 and 4 of the EWG 26-09 report and were transmitted through the Data Transmission Monitoring Tool (DTMT).

8. Changes in the report structure

Following the conclusions of PLEN 26-02, EWG 26-09 was requested to modify the report structure with the aim of improving readability and streamlining the presentation of results (ToR 7 of the EWG). Accordingly, the content of the main report was reduced to the overview of the work carried out, the stock summary sheets and a description of the data issues found for each of the stocks. The overall methodology section was moved to an annex, while the full description of each of the stock assessments (stock identity, biological information, complete data series, model settings, selection procedure, diagnostics, retrospective analysis, reference points and short-term forecasts - when relevant) were added as individual electronic annexes.

The summary sheets were also updated. First, the advice focused on stock status rather than fishing opportunities, as advice on fishing opportunities is delivered by the West Med fishing effort regime EWG (EWG 26-10). As a result, short-term forecasts were no longer needed for most of the stocks. The only exceptions were red and blue shrimp stocks and giant red shrimp stocks, which have been subject to maximum catch limits since 2022. For these stocks, short-term forecasts were conducted to estimate the catch levels corresponding to F_{MSY} in 2027. Second, the summary sheets incorporated estimates of partial fishing mortality by fleet and GSA for subsequent use by the West Med fishing effort regime EWG (EWG 26-10). Finally, for stocks with analytical assessments the summary table in the “stock and exploitation status” subsection was replaced by a Kobe plot that allowed the visualisation of the biomass and fishing mortality trajectories relative to B_{pa} and F_{MSY} reference points along the whole time series.

STECF comments

STECF acknowledges that the EWG has addressed all ToRs adequately and has carefully reviewed the quality of the assessment output.

1. Basis for advice

STECF observes that, compared with the previous year, the list of stocks suggested in the ToRs of the EWG was reduced from 20 to 19 stocks, with striped red mullet in GSA 5 being removed from the list. This reduction followed the workplan proposed by PLEN 26-02 and was intended to provide sufficient time during the EWG to initiate the testing of F_{upper} for the MVSs (ToR 3 of EWG 26-09) without further increasing the already substantial workload of the EWG. STECF notes that, given that striped red mullet in GSA 5 is not a target species included in the West Med MAP (Regulation (EU) 2019/1022), this will not affect the work conducted by the effort regime EWG (EWG 26-10).

STECF observes that the number of stocks for which advice was based on analytical assessments increased from 13 out of 20 in 2025 to 14 out of 19 in 2026, with all analytical assessments based on age-structured models. However, the attempts to extend analytical assessments to additional stocks produced heterogeneous results. Red mullet in GSA 9 and blue and red shrimp in GSAs 1_2 reverted from a4a to an ICES Category 3 approach because none of the tested model settings produced acceptable results. Conversely, blue and red shrimp and Norway lobster in GSA 5, red mullet in GSA 10, and blue and red shrimp in GSAs 8_9_10_11 moved to a4a assessments considered suitable for providing advice.

STECF notes that, as in previous years, EWG 26-09 explored age-structured stock assessments for deep-water rose shrimp in GSA 1, deep-water rose shrimp in GSAs 5_6_7 and red mullet in GSA 7. The models continued to show increasing trends in SSB and recruitment in recent years (EWG 24-10, EWG 25-09). STECF reiterates that these increasing patterns are not well understood for these stocks; therefore, the fishing mortality and biomass reference points cannot yet be considered fully robust for providing advice. Consequently, STECF agrees with the EWG's decision not to provide advice for these three stocks. STECF considers that further exploration of ICES Category 3 or 5 approaches could provide alternative bases for advice for these stocks.

STECF notes that a major change in the advice produced in 2026 compared to the one in 2025 was that the stock assessment EWG focused solely on stock status rather than on fishing opportunities. STECF recalls that stock status, reference points and partial fishing mortality estimates were transmitted to the West Med effort regime EWG (EWG 26-10), where alternative fishing opportunities scenarios were explored using bioeconomic models. Consequently, during EWG 26-09 short-term forecasts were only required for blue and red shrimp and for giant red shrimp stocks, which have been subject to maximum catch limits since 2022. These short-term forecasts served to estimate the catch levels corresponding to fishing at F_{MSY} (or its proxy) in 2027, which were also provided to EWG 26-10.

STECF recalls that, in previous years, when one stock was estimated to be below B_{pa} at the start of the advice year, an additional catch scenario was provided whereby projected catches were reduced below those corresponding to F_{MSY}. This year stock status advice was limited to F_{MSY} (or its proxy). Nevertheless, STECF reiterates that the principle of reducing F when biomass falls below a given threshold could contribute to a faster recovery of stock levels to those capable of producing MSY and, therefore, the inclusion of some scenarios along these lines could provide valuable information.

2. Stock status

STECF notes that 13 of the 14 analytically assessed stocks were fished above F_{MSY} or its proxy, while only deep-water rose shrimp in GSAs 8_9_10_11 was fished below F_{MSY}.

Regarding biomass status, seven of the 14 stocks with biomass reference points were above B_{lim} but below B_{pa}, while the remaining seven were above B_{pa}.

STECF notes that for the three blue and red shrimp stocks and the giant red shrimp stock for which short-term forecasts were conducted, fishing at F_{MSY} in 2027 was projected to result in SSB levels above B_{pa} in 2028 for all four stocks, and slightly above B_{MSY} in the case of giant red shrimp.

3. Methodology

STECF notes that, in line with recent years, the stock assessment EWG continues to incorporate methodological advances, while consolidating scripts and streamlining the assessment procedure, arising from EWG 26-03 (Methods - Stock assessments in the Western Mediterranean Sea 2026).

For the two hake stocks (hake in GSAs 1_5_6_7 and hake in GSAs 8_9_10_11) that spawn at the beginning of the year, stock status was based on SSB at the beginning of 2026 to account for fishing mortality during 2025, the last year of data. For all other stocks, their status was evaluated using SSB in 2025.

STECF observes that EWG 26-09 established a method to determine whether the reference points should be updated. It consisted in calculating reference points from a stochastic sample of the stock assessment results in order to derive the empirical distribution of the reference points. Thus, reference points were updated only when the values adopted in the previous year fell outside the 95% confidence interval of the empirical distribution. STECF agrees with EWG 26-09 that the preferred approach is to compare current reference point estimates with the confidence intervals of the previous year's empirical distributions. However, as these were unavailable, the approach used by EWG 26-09 based on the empirical distributions from the most recent assessments is considered a reasonable alternative. To enable the implementation of the preferred approach, STECF suggests archiving the confidence intervals from the empirical distributions of the reference points.

To identify the MVS, the EWG calculated the exploitation level (F/F_{MSY}) for each stock and determined the stock with the highest ratio within each EMU. STECF notes that for stocks considered to have high uncertainty, including the new analytical assessments conducted in 2026, F/F_{MSY} was calculated for each paired iteration of F and F_{MSY} from a stochastic sample, generating an empirical distribution of the ratio. The exploitation level was then estimated as the median of this distribution. STECF notes that the use of this method means that simply dividing the F by the F_{MSY} proxy values in Table 2 may produce values different from those presented in the F/F_{MSY} column. However, STECF acknowledges that this method allows uncertainty in reference points to be taken into account when F and F_{MSY} are estimated from the same stock assessment model and considers the method to be robust for evaluating stock status.

STECF notes that for some stock assessments there are large differences (>20%) between the observed and modelled catches in 2025. This lack of fit could affect the estimates of F/F_{MSY} that are used to assess the exploitation level. Therefore, STECF suggests that this issue be added to the list of issues to be addressed in future methodological EWGs.

4. F_{upper} for MVS in each EMU

STECF notes that the ad hoc contract followed the methodology established by EWG 24-02 to derive F_{MSY} or its proxy and the corresponding F_{MSY} ranges for the MVSs in each EMU. The candidate F_{upper} values for Norway lobster in GSAs 6 and 11 were subsequently evaluated using the MSE approach developed by EWG 26-03.

For Norway lobster in GSA 6, the MSE confirmed a well-defined production maximum and showed that the candidate Fupper of 0.43 met the specified precautionary risk criterion while maintaining catches close to MSY. Although the MSE settings differed from those used by EWG 24-02, the capped candidate value remained precautionary. STECF notes that deriving F_{upper} and F_{MSY} from the same assessment would improve methodological consistency, although the available results suggest that this would have a limited effect on the outcome.

For Norway lobster in GSA 11, both the derivation and evaluation of F_{upper} were conducted under the ad hoc contract. Because the equilibrium production curve lacked a well-defined maximum, the candidate F_{upper} of 0.24 was derived from the empirical relationships established by EWG 15-09, using F0.1 as a proxy for F_{MSY}. The candidate value was precautionary, with risk3 equal to zero and the 5% risk threshold not exceeded until fishing mortality reached approximately 0.55. Catches at F_{upper} were slightly above MSY (Catch/MSY ≈ 1.08). Consistent with EWG 24-02, STECF considers that this approach remains the most appropriate for stocks without a well-defined production maximum, although it does not fully conform to the definition of the F_{MSY} range.

Although the candidate F_{upper} values met the precautionary criteria, both MVSs were estimated to be above B_{lim} but below B_{pa} in 2025. In line with its previous observations, STECF considers that, under these conditions, restricting fishing mortality to the lower part of the F_{MSY} range, between F_{lower} and F_{MSY}, would reduce biological risks and could contribute to a faster recovery of stock biomass.

STECF notes that due to the time constraints, the MSE approach was applied using the same settings and assumptions as in EWG 26-03. If the MSE approach continues to be used for the evaluation of F_{MSY} ranges, STECF suggests that the sensitivity of the results to alternative assumptions (e.g. stock-recruitment dynamics) could be further explored.

5. Data issues/considerations

STECF notes that the EWG conducted extensive data quality checks on commercial data provided through the official Mediterranean and Black Sea Data Call, using the R scripts developed during EWG 21-02, EWG 22-03 and EWG 25-01. All data issues found were reported in the EWG 26-09 report and transmitted through the Data Transmission Monitoring Tool (DTMT).

STECF notes that some limitations in the application of age-structured assessment models may arise from the characteristics of the data submitted through the Data Collection Framework (DCF), such as the number of length measurements available by quarter and year for specific gear/GSA combinations. Where these limitations are not relevant to a DTMT transmission, they could instead be communicated to MARE Unit C3 for consideration in discussions on DCF National Work Plans (NWP) and Regional Work Plans (RWP) within the Regional Coordination Group RCG). It should be noted that in the RCG context, within the RDBFIS project framework, it is already being discussed whether the submission of data by Member States under the DCF at alternative aggregation levels would improve stock assessment processes. STECF considers that testing the potential benefits of alternative levels of data aggregation would provide a basis for considering any revision of the DCF protocol.

6. New report structure

STECF considers that the report structure defined in EWG 26-03 has improved the readability of the main report by presenting the key findings more concisely and placing the detailed technical information in the annexes. These annexes remain essential for scrutinising the data, model configurations and diagnostics underlying the assessments.

However, further harmonisation of the terminology and level of detail used across the summary sheets would improve their consistency.

7. EWG procedures and STECF process to provide advice in the West Med

STECF recognises that the organisation and capacity building of the stock assessment EWG have received considerable attention in recent years. Accordingly, STECF has made several suggestions to improve processes within the EWG, its coordination with the West Med Effort Regime EWG, and the STECF review process itself. STECF acknowledges the efforts made by DG MARE to address these issues through dedicated EWGs and notes that several of the proposed improvements have been successfully implemented.

STECF notes that concerns raised during previous EWGs, regarding the limited time available to conduct data preparation and assessment procedures concurrently, were addressed in the last two years by offering experts ad hoc contracts for data preparation prior to the EWG. These contracts were positively received and considered a significant improvement in the assessment process compared to previous years, enabling a more in-depth exploration of data issues. STECF agrees with the positive feedback provided by the EWG and supports the continuation of this approach in future years or, alternatively, the establishment of a dedicated data-preparation EWG.

STECF notes that methodological EWGs represent a step forward in the development of stock assessments for demersal stocks in the Western Mediterranean Sea. In particular, regarding the methodological EWG conducted this year (EWG 26-03), STECF notes that it contributed significantly to coordination between the stock assessment and the effort regime EWGs, including the development of an agreed protocol for data delivery.

EWG 26-03 identified a number of methodological issues that require further discussion and resolution. STECF considers that a regular annual methodological meeting would allow these issues to be addressed progressively and would contribute to further improving the stock assessment process.

STECF notes that, as a result of EWG 26-09 and EWG 26-10 being reviewed under the same plenary, the stock assessment results and recommendations could not be validated by the plenary before being considered by EWG 26-10.

STECF notes that the review process for stock assessments conducted during the plenary could be further strengthened through periodic in-depth scrutiny, either by means of dedicated ad hoc contracts after the EWG or through participation of external experts during the EWG meetings.

STECF conclusions

STECF concludes that EWG 26-09 adequately addressed all ToRs and that ad hoc contract No 2689 completed the evaluation of F_{upper} for the MVSs following the meeting.

Based on the findings of EWG 26-09, STECF concludes as follows:

- The EWG provided analytical stock-status estimates for 14 of the 19 stocks considered and delivered the biological inputs required by EWG 26-10 to evaluate the West Med effort regime.
- Norway lobster in GSA 6 was identified as the MVS for EMU 1, and Norway lobster in GSA 11 as the MVS for EMU 2. The candidate F_{upper} values for both stocks complied with the long-term precautionary risk threshold.
- Thirteen of the 14 analytically assessed stocks were fished above F_{MSY} or its proxy, with only deep-water rose shrimp in GSAs 8_9_10_11 being fished below its F_{MSY} proxy.

Seven of the 14 stocks with biomass reference points were above B_{lim} but below B_{pa}, while the remaining seven were above B_{pa}.

- The use of ad hoc contracts for data preparation, dedicated methodological EWGs and the revised report structure have contributed to improving the stock assessment process, coordination with the effort regime EWG, and the readability of the resulting advice compared with 2025.
- Scheduling the stock assessment EWG earlier in the year (e.g., June) would provide additional time to review and consolidate the stock-status advice before its use by the effort regime EWG.
- Periodic in-depth reviews, conducted through dedicated ad hoc contracts or with the participation of external experts during the EWG, would strengthen the scrutiny of the stock assessments.
- A regular annual methodological EWG, in coordination with DG MARE and the JRC, could support the progressive resolution of outstanding methodological issues.

Contact details of STECF members

[1] - Information on STECF members' affiliations is displayed for information only. In any case, Members of the STECF shall act independently. In the context of the STECF work, the committee members do not represent the institutions/bodies they are affiliated to in their daily jobs.

Name	Affiliation[1]	Email
Ballesteros, Marta	Spanish Institute of Oceanography (IEO-CSIC), Center of Vigo, Subida a Radio Faro 50-55, Vigo, Spain.	marta.ballesteros@ieo.csic.es
Bastardie, François	Technical University of Denmark, National Institute of Aquatic Resources (DTU-AQUA), Kemitorvet, 2800 Kgs. Lyngby, Denmark	fba@aqua.dtu.dk
Casey, John	Independent consultant	blindlemoncasey@gmail.com
Colaço, Ana	University of the Azores, Institute of Marine Sciences - OKEANOS. Rua Professor Doutor Frederico Machado 4, 9900-140 Horta, Portugal	maria.aa.colaco@uac.pt
Cuende de Francisco, Elsa	AZTI (Member of the Basque Research and Technology Alliance). Marine Research Unit. Center of Sukarrieta, Bizkaia, Spain.	ecuende@azti.es
Döring, Ralf	Thünen Institute [TI-SF] Federal Research Institute for Rural Areas, Forestry and Fisheries, Institute of Sea Fisheries, Economic analyses unit Herwigstrasse 31, D-27572 Bremerhaven, Germany	ralf.doering@thuenen.de
Drouineau, Hilaire	INRAE, UR EABX, 50 avenue de Verdun, 33612 Cestas Cedex, France	hilaire.drouineau@inrae.fr

Name	Affiliation[1]	Email
Grati, Fabio (vice-chair)	National Research Council (CNR) – Institute for Biological Resources and Marine Biotechnologies (IRBIM), L.go Fiera della Pesca, 2, 60125, Ancona, Italy	fabio.grati@cnr.it
Griffiths, Christopher	Swedish University of Agricultural Sciences (SLU), Department of Aquatic Resources, Turistgatan 5, SE-45330, Lysekil, Sweden	christopher.griffiths@slu.se
Hidalgo, Manuel	Spanish Institute of Oceanography (IEO, CSIC), Balearic Oceanographic Center (COB), Palma, 07015, Spain	jm.hidalgo@ieo.csic.es
Ibaibarriaga, Leire	AZTI. Marine Research Unit. Txatxarramendi Ugartea z/g. E-48395 Sukarrieta, Bizkaia. Spain.	libaibarriaga@azti.es
Jackson, Emmet	Bord Iascaigh Mhara (BIM), Ireland's Seafood Development Agency.	Emmet.jackson@bim.ie
Jardim, Ernesto	IPMA - Instituto Português do Mar e da Atmosfera Rua C do Aeroporto. 1749-077 Lisboa. Portugal	ernesto.jardim@gmail.com
Jung, Armelle	DRDH, Techonopôle Brest-Iroise, BLP 15 rue Dumont d'Urville, Plouzane, France	armelle.jung@desrequinsetdeshommes.org
Lucchetti, Alessandro	National Research Council (CNR) – Institute for Biological Resources and Marine Biotechnologies (IRBIM), Largo Fiera della Pesca, 2, 60125, Ancona, Italy	alessandro.lucchetti@cnr.it
Mannini, Alessandro	CNR IRBIM Ancona, Largo Fiera della Pesca, 260125 Ancona ITALY	alessandro.mannini@irbim.cnr.it

Name	Affiliation[1]	Email
Moore, Claire	Marine Institute, Renville, Galway, Ireland	claire.moore@marine.ie
Motova - Surmava, Arina	Sea Fish Industry Authority, 18 Logie Mill, Logie Green Road, Edinburgh EH7 4HS, UK	arina.motova@seafish.co.uk
Nimmegeers, Sofie	Flanders research institute for agriculture, fisheries and food, Belgium	Sofie.Nimmegeers@ilvo.vlaanderen.be
Orio, Alessandro	Swedish University of Agricultural Sciences (SLU), Department of Aquatic Resources, Turistgatan 5, SE-45330, Lysekil, Sweden	alessandro.orio@slu.se
Pinto, Cecilia	Università di Genova, DISTAV - Dipartimento di Scienze della Terra, dell'Ambiente e della Vita, Corso Europa 26, 16132 Genova, Italy	cecilia.pinto@edu.unige.it
Prellezo, Raúl (chair)	AZTI -Unidad de Investigación Marina, Txatxarramendi Ugartea z/g 48395 Sukarrieta (Bizkaia), Spain	rprellezo@azti.es
Raid, Tiit	Estonian Marine Institute, University of Tartu. Mäealuse 14, Tallinn, EE-126, Estonia	tiit.raid@gmail.com
Russo, Tommaso	University of Rome Tor Vergata, via della Ricerca Scientifica snc, 00133 Rome, Italy	Tommaso.Russo@Uniroma2.it
Sabatella, Evelina Carmen	National Research Council (CNR) – Institute for Research on Population and Social Policies (IRPPS), Corso S. Vincenzo Ferreri, 12, 84084 Fisciano, Salerno, Italy	evelinacarmen.sabatella@cnr.it
Savina-Rolland, Marie	Ifremer, 8 rue François Toullec 56100 Lorient	Marie.Savina.Rolland@ifremer.fr

Name	Affiliation[1]	Email
Spedicato, Maria Teresa	Fondazione COISPA Via dei trulli 18-20 70126 Bari, Italy	spedicato@fondazionecoispa.org
Steins, Nathalie	Wageningen Marine Research Korringaweg 7 4401 NT Yerseke The Netherlands	nathalie.steins@wur.nl
Stransky, Christoph	Thünen Institute [TI-SF] Federal Research Institute for Rural Areas, Forestry and Fisheries, Institute of Sea Fisheries, Herwigstrasse 31, D-27572 Bremerhaven, Germany	christoph.stransky@thuenen.de
Tserpes, George	Hellenic Center for Marine Research (HCMR), Thalassokosmos, 71500 Gournes Pediados, Crete, Greece	gtserpes@hcmr.gr
Ulrich, Clara	IFREMER, Rue de l'Ile d'Yeu, 44311 Nantes, France	Clara.Ulrich@ifremer.fr
Uriarte, Andres	Independent expert	auriartes@hotmail.com
Uusitalo, Laura	Natural Resources Institute Finland (Luke), Finland	laura.uusitalo@luke.fi (secondary: laura.uusitalo@iki.fi)
Valentinsson, Daniel	Swedish University of Agricultural Sciences (SLU), Department of Aquatic Resources, Turistgatan 5, SE-45330, Lysekil, Sweden	daniel.valentinsson@slu.se

REPORT TO THE STECF

Stock assessments in the Western Mediterranean Sea 2026 (EWG-26-09)

29 August – 4 September 2026

This report does not necessarily reflect the view of the STECF and the European Commission and in no way anticipates the Commission's future policy in this area

1. INTRODUCTION

The EWG 26-09 was held in hybrid form, remotely and in person in Ispra (Italy, JRC premises), from the 29th August to the 4th September 2026. The meeting was attended by 22 experts in total, including two STECF members and three JRC experts. One observer participated online. The objective of the EWG 26-09 was to carry out demersal stock assessments and provide reference points for stocks in the Western Mediterranean, and short-term forecast advice for the red shrimps stocks, as defined in the EWG 26-09 ToRs.

In preparation to the EWG 26-09, ad hoc contracts for the data processing and stock objects preparation were distributed to nearly all the experts. This allowed the EWG 26-09 to focus on the assessment rather than spending time checking the data and building the R objects required to run the stock assessment methodologies.

An initial plenary session commenced at 09:00 on the first day, during which the ToRs were discussed and examined in detail.

The agenda was flexible to accommodate the expert's work load. The assessment workflow followed the usual process of

1. discuss and decide data processing
2. fitting models
3. discuss assessment runs and decide the final assessment run
4. estimate reference points
5. set catch advice based on short-term forecasts for the red shrimps (ARA and ARS) stocks with quantitative assessment using the multiannual plan harvest control rule
6. report

A review of the assessment results was completed on Friday, and the meeting closed at 16:00 CEST.

Organization of the report:

- Section 2 provides a meeting overview and a summary of main results, main conclusions, stock status relative to MSY, and biomass reference points;
- Section 3 gives the summaries by stock relating to ToR 8 by stock, based on the template developed in EWG 18-12, and updated this year;
- Section 4 summarises data deficiencies.

Terms of Reference for EWG-26-09

For the stocks given in Table 1, the group is requested, on the basis of the outcomes of the STECF ad hoc contracts launched in July 2026, to:

ToR 1. To assess trends in historic and recent stock parameters on fishing mortality, stock biomass, spawning stock biomass, and recruitment. Adjustments to the current assessment models should be applied as appropriate, and evaluated through diagnostics, including

retrospective analyses. The selection of the most reliable assessment shall be explained. Assumptions and uncertainties shall be specified.

Special attention should be paid to:

- Stocks listed in Table 1 without an analytical assessment to attempt fitting one.
- On the basis of EWG 25-01 scripts and the data sharing protocol agreed in EWG 26-03 to provide partial fishing mortality estimation in EMU 1 and 2 in order to estimate the partial-F by gear and GSA.

ToR 2. Based on the work developed in STECF EWG 24-02 and STECF 24-10, to compute the conservation reference points (i.e. Bpa and Blim) and the FMSY point value (Fmax for the stocks in Type 1 group (e.g., HKE1567, HKE891011, NEP6) or other appropriate proxy (i.e., F0.1), compared to the ones estimated by previous EWGs. The proposed values shall be related to long-term high yields and low risk of stock/fishery collapse and ensure that the exploitation levels restore and maintain marine biological resources at least at levels which can produce the maximum sustainable yield.

ToR 3. The EWG should update the F reference points (FMSY and Fmsy ranges produced by EWG 24-02 and 24-10, needed for the MAP implementation: Fmax for type 1 stocks and F0.1 for all the others. For the most vulnerable stocks in each EMU, work should be initiated to test in line with the conclusions of PLEN 26-02 the Fupper ranges with the MSE procedure and work is to be completed with an ad hoc contract.

ToR 4. To provide short and medium term forecasts of spawning stock biomass, stock biomass and catches for the red shrimp (ARA and ARS) stocks identified in Table 1. The forecasts shall include different management scenarios, including: the status quo fishing mortality and target in line with FMSY ranges or other appropriate proxy for 2027.

ToR 5. To summarize and concisely describe all data quality deficiencies, including possible limitations with the surveys of relevance for stock assessments and fisheries. Such review and description are to be based on the data format of the official DCF data call for the Mediterranean Sea launched in 2026. Identify further research studies and data collection which would be required for improved fish stock assessments.

ToR 6. To ensure that all unresolved data transmission issues related to the stocks encountered prior to and during the EWG meeting are reported on line via the Data Transmission Monitoring Tool (DTMT) available at https://datacollection.jrc.ec.europa.eu/web/dcf/dtmt. Guidance on precisely what should be inserted in the DTMT, log-on credentials and access rights will be provided separately by the STECF Secretariat focal point for the EWG.

ToR 7. In line with the conclusions of PLEN 26-02 and with the aim of streamlining the report structure and increase the readability, modify the STECF report structure as follows:

A. Using summary sheet structure developed in 2018 (EWG 18-12), provide in summary sheets a synoptic overview of: (i) the fishery; (ii) the most recent state of the stocks (spawning stock biomass, stock biomass, recruits and exploitation level relative to Fmsy, and by fishing gear, if possible including relevant types of trawlers, longliners and netters); (iii) the source of data and methods and; (iv) the F management advice taking into account FMSY value, Fmsy ranges and conservation reference points and (v) short term catch forecast for selected crustacean stocks (as per Table 1).
B. Provide a summary table showing the progress already made in the transition towards MSY and the F and catch advice for 2026 to reach and maintain Fmsy.

C. In a digital file and for the sake of fully documenting the stock assessments, document the following:
   1. the most updated information on stock identification and boundaries, length and age composition, growth, maturity, feeding, essential fish habitats including spawning grounds and seasonality as well as natural mortality.
   2. complete sets of annual data on landings and discards for the longest time series available up to and including 2026, including length frequency distribution over time.
   3. Full description of final model settings, description of model selection procedure, diagnostics and retrospective analysis.

Table 1.1 List of suggested stocks to be assessed by the EWG 26-09.

Area	Common name	Type of advice from EWG 25-09	Scientific name	Short-Term Catch Advice for 2027
GSAs 1-5-6-7	Hake	Quantitative with SCAA (a4a)	*Merluccius merluccius*	NO
GSA 1	Deep-water rose shrimp	No advice	*Parapenaeus longirostris*	NO
GSAs 5-6-7	Deep-water rose shrimp	No advice	*Parapenaeus longirostris*	NO
GSA 1	Red mullet	Quantitative with SCAA (a4a)	*Mullus barbatus*	NO
GSA 6	Red mullet	Quantitative with SCAA (a4a)	*Mullus barbatus*	NO
GSA 7	Red mullet	No advice	*Mullus barbatus*	NO
GSA 5	Norway lobster	ICES Cat. 3	*Nephrops norvegicus*	NO
GSA 6	Norway lobster	Quantitative with SCAA (a4a)	*Nephrops norvegicus*	NO
GSAs 8-9-10-11	Hake	Quantitative with SCAA (a4a)	*Merluccius merluccius*	NO
GSAs 8-9-10-11	Deep-water rose shrimp	Quantitative with SCAA (a4a)	*Parapenaeus longirostris*	NO
GSA 9	Red mullet	Quantitative with SCAA (a4a)	*Mullus barbatus*	NO
GSA 10	Red mullet	ICES Cat. 5	*Mullus barbatus*	NO
GSA 9	Norway lobster	Quantitative with SCAA (a4a)	*Nephrops norvegicus*	NO
GSA 11	Norway lobster	Quantitative with SCAA (a4a)	*Nephrops norvegicus*	NO
GSAs 1-2	Blue and red shrimp	Quantitative with SCAA (a4a)	*Aristeus antennatus*	YES
GSA 5	Blue and red shrimp	ICES Cat. 3	*Aristeus antennatus*	YES
GSAs 6-7	Blue and red shrimp	Quantitative with SCAA (a4a)	*Aristeus antennatus*	YES
GSAs 8-9-10-11	Giant red shrimp	Quantitative with SCAA (a4a)	*Aristaeomorpha foliacea*	YES
GSAs 8-9-10-11	Blue and red shrimp	ICES Cat. 5	*Aristeus antennatus*	YES

Source: Own elaborations.

2 OVERVIEW

The EWG 26-09 was held in hybrid form remotely and in person in Ispra (Italy, JRC premises), from the 29th August to the 4th September 2026. The meeting was attended by 22 experts in total, including two STECF members and three JRC experts. One observer participated online. The objective of the EWG 26-09 was to carry out demersal stock assessments and provide reference points for stocks in the Western Mediterranean, and short-term forecast advice for the red shrimps stocks, as defined in the EWG 26-09 ToRs.

The EWG addressed all ToRs. As concerns ToR 3 (FMSY ranges for the most vulnerable stocks), the work done during EWG 26-09 concerned the setting up of the full feedback loop MSE, taking advantage of the work performed during the methodological working group in May 2026 (EWG 26-03). Values for Fupper were calculated following the work done by EWG 24-02, which for both MVS (NEP6 and NEP11) this year resulted in using the empirical linear model prediction. Afterwards those values were checked through the MSE (implemented under an ad hoc contract during the week after the EWG 26-09) to assess the probability of SSB being below Blim. The probability of falling below Blim fishing at Fupper for the two stocks was smaller than 5%, thus the Fupper values were considered as precautionary, and were provided to the modellers working on the ad hoc contracts in preparation of EWG 26-10. The ad hoc report describing the methodological approaches, the analyses and the results, is provided as an electronic annex to this report.

The EWG has carefully reviewed the quality of the assessments produced. A total of 19 stocks (area/species combinations) were evaluated this year (Table 2.1). Fourteen stocks were evaluated by means of a statistical catch at age (SCAA) model (a4a). The lack of MEDITS survey information in Italian areas for 2022 and the delay in the MEDITS 2023 for GSAs 9 and 10 did not hamper to try the update of a4a stocks in EMU2 as the models attempted were run including NAs in the tuning index for 2022, as agreed by EWGS 24-10 and 25-09.

In 2025, index-based advice according to ICES Category 3 was given for two stocks in the Effort Management Unit 1 (EMU 1) of the Western Mediterranean Multiannual Management Plan (Regulation (EU) 2019/1022), namely blue and red shrimp in GSA 5, and Norway lobster in GSA 5. As for two stocks in EMU 2, namely red mullet in GSA 10 and blue and red shrimp in GSAs 8, 9, 10 and 11, in line with the decision by EWG 24-10, it was agreed to consider providing a catch-only advice based on the ICES Category 5 approach, due to the missing survey index information for 2022 in Italian GSAs, and problems with the timing of the MEDITS survey in 2023 (summer period in GSA11, autumn in GSAs 9 and 10).

EWG 26-09 made an attempt to run a quantitative assessment with these stocks taking advantage of the additional years of data provided through the 2026 Med&BS Data Call. For the four stocks, an a4a assessment was performed and it was validated by the group as suitable for providing advice. However, since these stocks were assessed for the first time, the EWG 26-09 recommend waiting until next year for a more consolidated advice.

For the stocks of DPS1, DPS567 and MUT7 no advice was provided as the models cannot fully explain the dynamics of these stocks, in particular the estimation of stock-recruitment relationships and reference points. The models performed well in terms of cohort consistency, diagnostics and retrospective analysis, thus being able to estimate population numbers and fishing mortality. However, the three stocks still showed a very high increases in productivity, with recruitment, catches and biomass increasing in the recent years.

For MUT9 and ARA12, none of the model settings tried was able to provide acceptable results, therefore a biomass index-based advice is given again calculated applying the ICES Category 3.

In line with the provided ToRs, EWG 26-09 carried out short term forecasts for the red shrimps stocks with accepted quantitative assessments. The reference points were re-evaluated for most of the stocks, due to changes in the input data (e.g., revised biological parameters for building the stock objects, new model settings, etc.). As mentioned above, for four stocks (ARA5, NEP5, ARA891011 and MUT10), although advice and reference points are provided, further evaluation over time of model stability are needed before the assessment could be considered as consolidated.

The concerns raised during past EWGs about time availability were addressed this year by offering experts ad-hoc contracts for the data preparation well in advance the EWG 26-09. These contracts were well received and were considered a major improvement over the previous years assessment process. It was felt that some feedback during the ad-hoc contracts would be a great advantage, as that would then allow the experts to focus on producing the input data ahead of the meeting. A reoccurring issue that involves most stocks is the necessity to prepare the data to gear/GSA level to be delivered to the EWG 26-10 on the fishing effort regime in the Western Mediterranean, as in some gear/GSA combinations insufficient data is available. This leads to increasing the number of assumptions made with regards to the age signals through the stock's assessment period.

Table 2.1. Summary of the work attempted and basis for advice in 2025 (EWG 25-09) and 2026 (EWG 26-09) assessments. a4a: an age-based assessment method; Index refers to the ICES Category 3 approach to provide advice for stocks without analytic assessment; Catch only option refers to the ICES Category 5 approach.

Area	Species	EWG 25-09	EWG 26-09
1_5_6_7	Hake	a4a	a4a
1	Deep-water rose shrimp	No advice	No advice
5_6_7	Deep-water rose shrimp	No advice	No advice
1	Red Mullet	a4a	a4a
6	Red Mullet	a4a	a4a
7	Red Mullet	No advice	No advice
5	Norway lobster	ICES Category 3	a4a
6	Norway lobster	a4a	a4a
8_9_10_11	Hake	a4a	a4a
8_9_10_11	Deep-water rose shrimp	a4a	a4a
9	Red Mullet	a4a	ICES Category 3
10	Red Mullet	ICES Category 5	a4a
9	Norway lobster	a4a	a4a
11	Norway lobster	a4a	a4a
1_2	Blue and red shrimp	a4a	ICES Category 3
5	Blue and red shrimp	ICES Category 3	a4a
6_7	Blue and red shrimp	a4a	a4a
8_9_10_11	Blue and red shrimp	ICES Category 5	a4a
8_9_10_11	Giant red shrimp	a4a	a4a

Source: Own elaborations.

The main results are summarized in Table 2.2. Overall, the assessments indicate that for 13 out of the 14 stocks with analytical assessment overfishing occurred, while one stock (DPS in GSAs 8, 9, 10, 11) is being fished below F_{MSY} (Tables 2.2 and 2.3).

Table 2.2 Summary of advice and stock status from EWG 26-09 by stock. Stock status is provided as F over Fmsy, SSB over Blim and SSB over Bpa. For stocks that spawn in the beginning of the year, SSB in 2026 is used to compute the ratio. Catch in 2027 is based on fishing at FMSY in 2027. Reference point definitions and calculations are reported in Annex 1 - Methods of the EWG report.

Area	Species	Official catches 2025	Modelled catches 2025	SSB 2025	F 2025	F_{MSY} proxy	F/F_{MSY}	B_{lim}	SSB/B_{lim}	B_{pa}	SSB/B_{pa}	Catch 2027	SSB 2028	$SSB2028/B_{msy}$	$SSB2028/B_{pa}$	$SSB2028/B_{lim}$
1_5_6_7	Hake	3211	3260	4233^	1.17	0.61	1.92	3242	1.31	6484	0.65					
1	Deep-water rose shrimp	1458											*No advice*			
5_6_7	Deep-water rose shrimp	2289											*No advice*			
1	Red Mullet	102	141	196	0.82	0.59	1.39	75	2.61	150	1.31					
6	Red Mullet	1207	1269	1805	1.04	0.76	1.37	481	3.75	962	1.88					
7	Red Mullet	408											*No advice*			
5	Norway lobster	19	20	88	0.17	0.12	1.38*	51	1.73	101	0.87					
6	Norway lobster	182	210	230	0.86	0.29	2.97	217	1.06	433	0.53					
8_9_10_11	Hake	1190	1316	4161^	0.62	0.47	1.33	3277	1.27	6554	0.63					
8_9_10_11	Deep-water rose shrimp	1379	1361	813	1.21	1.34	0.90	185	4.39	370	2.20					
9	Red Mullet	467										520	*No advice*			
10	Red Mullet	197	232	404	0.60	0.28	2.07*	268	1.51	534	0.76					
9	Norway lobster	122	124	388	0.25	0.14	1.73*	243	1.60	486	0.80					

11	Norway lobster	28	28	41	0.37	0.18	2.09*	26	1.58	53	0.77					
1_2	Blue and red shrimp	153										108	*No Advice*			
5	Blue and red shrimp	128	137	153	1.04	0.61	1.73*	64	2.39	128	1.20	125	207	0.81	1.62	3.25
6_7	Blue and red shrimp	413	434	627	0.66	0.54	1.23	225	2.79	450	1.39	529	906	0.89	2.01	4.03
8_9_10_11	Blue and red shrimp	163	159	474	0.45	0.40	1.12*	174	2.72	347	1.37	184	628	0.90	1.81	3.61
8_9_10_11	Giant red shrimp	303	313	537	0.51	0.49	1.04	154	3.49	309	1.74	419	646	1.05	2.09	4.19

*The exploitation level is estimated as the median of the empirical distribution of the ratio. In these cases the median of the empirical distribution of the ratio, may not be numerically equal to the ratio of the medians of the empirical distributions of F2025 and F_{MSY} proxy (see section 6 of Annex 1 - Methods).

^SSB in 2026 for the stocks that spawn at the beginning of the year.

Source: Own elaborations.

2.1 Quality of the assessment

In Italian GSAs, MEDITS survey timing was delayed in 2020, 2021, and 2023 (at least in some GSAs), and the survey was not conducted in 2022. In addition, the number of hauls was also reduced in 2020 and 2023 in GSA 10. The MEDITS survey in Italian GSAs needs to be carried out within a specific seasonal window, in line to the MEDITS protocol and the Med&BS Regional Workplan for Fisheries Data Collection. Because the survey informs several short-lived, summer-spawning species, consistent timing is essential for collecting comparable data.

Despite notable improvements in 2024 and 2025, sampling of commercial catches and discards in GSA 10 was poor across most species during the period 2018–2023. This caused problems for the red mullet assessment in GSA 10: due to these data-collection failures, neither a full assessment nor index-based advice could be produced by previous EWGs. For other stocks that include GSA 10 but are assessed together with additional GSAs, the missing information was partly covered by borrowing size structure data from GSAs 9 and 11. It is crucial that further improvements in the sampling of commercial catches and discards in GSA 10 are implemented in the coming years.

For the stocks in GSA 5, the possibility of extending backward the survey time series including the data collected during the BALAR survey (as done last year for European hake, EWG 25-06) should be explored, as this could help improving the quality of the assessments.

For the assessments of DPS1, DPS 567, and MUT7, EWG 26-09 deemed them as unsuitable for providing advice, the main issue was the poorly understood biological dynamics, not well captured by the model.

European hake

The assessment of European hake in GSAs 1, 5, 6, 7 is an update of model developed by STECF EWGs 25-06 and 25-09. Differences to the previous model agreed at the GFCM 2019 benchmark include the use of a new natural mortality vector based on Chen-Watanabe and different submodels. In terms of data, the time-series was extended to include the years 2002-2007 thanks to the inclusion of the BALAR survey in GSA 5. Further changes to the survey was implementation of the scaled down survey index (STECF EWG 25-06) as well as using NAs in 2020.

For the stock assessment for European hake in GSAs 8, 9, 10, 11, the model was modified compared to the 2019 benchmark settings: the specification of the fishing mortality submodel was slightly modified to give more flexibility to the model. The assessment carried out during EWG 25-09 performed well in terms of diagnostics, although it showed some instability in the retrospective analysis. For this reason, the fishing mortality submodel was slightly modified to better fit the new data. All diagnostics of the new model were considered acceptable, and the retrospective analysis showed improved behaviour. Overall, the conclusion of F greater than FMSY over the time series is consistent.

Red mullet

For MUT1, new slicing procedures were applied using available ALKs. The same model as last year was used, several models were explored and although some of them were performing better, the change was not significant enough. So to be consistent with the working group we decided a conservative approach. The lack of survey in 2020 is not causing significant issues. Some discards are reported in the last years and those are correctly considered in the assessment. Reference points from EWG 25-09 were confirmed.

For MUT6, the assessment is an update of the last year model. All the diagnostics were considered acceptable. Therefore, biological reference points calculated by EWG 25-09 were considered. The uncertainty in growth parameters detected last year remains, and published parameters were used rather than those provided by the DCF. The survey was not fully carried out in 2020 and thus was not considered to be representative of the entire population in 2020.

For MUT7, the assessment is an update of the previous year, including a minor update on the fishing mortality model. As last year, MUT7 recruitment dynamics remains poorly understood, leading to poor model predictive capacity, which makes it difficult to propose reasonable reference points and short-term forecast. Hence, EWG 26-09 provides no advice for MUT7.

For red mullet in GSA 9, several a4a model settings were tested, none of them producing acceptable diagnostics and retrospective. Given the reduced robustness of the assessment, ICES Category 3 method 2.2 was applied as a more precautionary and stable approach.

For red mullet in GSA 10, a new assessment model was presented and achieved convergence for the first time. Overall, the model diagnostics, including the retrospective analysis, were considered acceptable. Nevertheless, some instability remains in the terminal years, particularly in the estimates of fishing mortality. This instability is likely associated with some limitations in the input data, including the absence of the MEDITS survey in 2022 and reduced survey coverage in 2020 and 2023, when the number of hauls was approximately 20–50% below that required by the MEDITS protocol. Additional uncertainty arises from missing or incomplete LFDs from commercial data during the most recent years of the time series. The assessment results should therefore be interpreted with caution.

Deep water rose shrimp

For deep water rose shrimp in GSA 1 and GSAs 5, 6, 7, no stock assessment was accepted. This was due to the biomass increasing beyond what is biologically reasonable. Promising indications that the stocks are developing positively is that the index does show the same increase in biomass.

For the assessment of deep-water rose shrimp in GSAs 8, 9, 10, and 11, relative to the configuration used by STECF EWG 25-09, the main change was the increase in the basis dimension of the year smoother in the fishing mortality model from k = 7 to k = 11. This provided greater flexibility to describe interannual changes in fishing mortality. The selected model showed no major systematic patterns in the residuals and provided an acceptable representation of the available catch and survey information. Retrospective diagnostics were considered acceptable and did not indicate substantial instability in the terminal estimates

Norway lobster

For Norway lobster in GSA 5, this is a new analytical assessment, since last year catch advice was provided based on the ICES Cat. 3 approach. The new assessment is based on a separable model. All the diagnostics were considered as acceptable. Nevertheless, as this is the first analytical assessment, the results should be interpreted with caution.

For Norway lobster in GSA 6, the same assessment model as the last year was performed for this year with a minor change in the number of knots in the SR submodel (increasing of knots from 4 to 7). The MEDITS survey index was not considered for the year 2020 as it was decided for the previous years of assessment. Multiple scenarios were explored to improve the quality of the assessment. Among these, the same model settings as last year provided

the best consistency in retrospective analysis, and all other diagnostics were also considered acceptable.

For Norway lobster in GSA 9, the assessment is an update of the model implemented by EWG 25-09 (STECF 2025a). The model diagnostics evaluated were considered acceptable by EWG 26-09. Some retrospective patterns are observed for peel 5. The EWG commented on the effect of the large catches observed in years 2017-2018 on retrospective stability. It is worth to mention that data in 2017 were corrected, using data from the FDI data call, because of a revision of official data that has not been correctly implemented throughout data calls medbs and FDI (STECF 2025b). A sensitivity analysis was attempted by EWG 26-09 (available as annex), focusing on the use of survey by strata, but did not led to any major improvement of model diagnostics.

For Norway lobster in GSA 11, a revised assessment approach was adopted, as updating the previous model resulted in retrospective patterns that were considered unacceptable. Despite the changes implemented, the model remains highly unstable. The current configuration was considered the most appropriate among the alternatives explored, as it provided slightly improved diagnostics compared to the model developed during EWG 25-09.

Blue and red shrimp

For blue and red shrimp in GSAs 1 and 2, several a4a models were tested, none of them producing acceptable diagnostics and retrospective. Given the reduced robustness of the assessment, ICES Category 3 method 2.2 was applied as a more precautionary and stable approach.

For blue and red shrimp in GSA 5, a new assessment was achieved. The a4a model tested for the assessment of red shrimp in GSA 5 produced overall good diagnostics (residuals and retrospective analysis).

For blue and red shrimp in GSAs 6 and 7, new sex-separated input data were implemented; consequently, a new assessment model was tested and approved. Discards were directly added to the catch data. No length reconstruction was performed, as the length-frequency distributions for the OTB fleet remained consistent throughout the time series. All the diagnostics were considered acceptable.

For blue and red shrimp in GSAs 8, 9, 10, 11, a new assessment model was used, as the update of the previous model lead to retrospective patterns deemed unacceptable. A length-frequency reconstruction was applied to fill gaps in the annual and quarterly observations. This was necessary due to the sparsity and, particularly for GSA 10, the absence or inconsistency of the available length-frequency distributions. Although the diagnostics were considered acceptable overall, the reconstruction procedure may have affected the model results. Several model configurations were tested to improve the diagnostics. The parameter k for age in the fishing submodel was progressively increased. A value of k = 5 in the fishing submodel was ultimately selected as the best compromise, although an increasing pattern in the residuals for age 6 remained.

Giant Red Shrimp

For giant red shrimp, ARS 891011 an a4a model was fitted using the same biological parameters than for EWG 25-09. The assessment was only a model update. The stock is above Bpa but below BMSY and fishing mortality is slightly higher than FMSY.

2.2 Reference Points

For 9 of the stocks evaluated here new reference points were estimated by EWG 26-09. According to STECF PLEN 24-02, F_{max} was considered as a proxy of F_{MSY} for the three Type 1 stocks identified by EWG 24-02, namely hake in EMU1 and EMU2, and NEP in GSA 6. The remaining stocks do not have analytical assessments. The reference points have been recalculated following the agreed procedures from EWG 22-03. To decide whether reference points should be updated, the previous year's reference points were compared with the empirical distribution of the reference points computed from this year's assessment. These distributions are obtained by estimating a set of reference points for each iteration of the relevant quantities, such as catch numbers at age, stock numbers at age, and fishing mortality at age. These iterations are generated with the 'simulate' method, which uses the parameters estimated by the model, along with their covariance matrix, to simulate multivariate normal parameters on the log scale, adding estimation uncertainty to those quantities. For the stocks with no changes in terms of input data and model settings, if the previous estimate fell within the 95% confidence interval, the reference points were not updated. The calculations are documented by stock in the electronic annexes and included in the summary sheets in Section 3. The reference points are tabulated in Table 2.2.1.

Table 2.2.1. Reference points.

Area	Species	FMSY proxy	Bmsy	Bpa	Blim	Basis	Comments
1_5_6_7	Hake	0.61	29845	6484	3242	Segreg as SR: Blim as the breakpoint of the Segreg	F_{max} as F_{MSY} proxy, from EWG 25-09
1	Deep-water rose shrimp						Uncertainty due to fast moving dynamics
5_6_7	Deep-water rose shrimp						Uncertainty due to fast moving dynamics
1	Red Mullet	0.59	300	150	75	Geometric mean of REC: Blim as 0.25 BMSY (=BF0.1)	from EWG 25-09
6	Red Mullet	0.76	1926	962	481	Geometric mean of REC: Blim as 0.25 BMSY (=BF0.1)	from EWG 25-09
7	Red Mullet						Uncertainty due to fast moving dynamics
5	Norway lobster	0.12	202	101	51	Geometric mean of REC: Blim as 0.25 BMSY (=BF0.1)	New assessment
6	Norway lobster	0.29	867	433	217	Geometric mean of REC: Blim as 0.25 BMSY (=BFmax)	F_{max} as F_{MSY} proxy; from EWG 25-09
8_9_10_11	Hake	0.47	13108	6554	3277	Geometric mean of REC: Blim as 0.25 BMSY (=BFmax)	F_{max} as F_{MSY} proxy, updated input data, model settings, and reference points

8_9_10_11	Deep-water rose shrimp	1.34	740	370	185	Geometric mean of REC: Blim as 0.25 BMSY (=BF0.1)	Updated model settings and reference points
9	Red Mullet						Index trigger value (Itrigger), defined as Itrigger = Iloss × 1.4.
10	Red Mullet	0.28	1068	534	268	Geometric mean of REC: Blim as 0.25 BMSY (=BF0.1)	New assessment
9	Norway lobster	0.14	914	486	243	Segreg SR; Blim as 0.25 BMSY (=BF0.1)	Updated input data and reference points
11	Norway lobster	0.18	106	53	26	Geometric mean of REC: Blim as 0.25 BMSY (=BF0.1)	Updated model settings and reference points
1_2	Blue and red shrimp						Index trigger value (Itrigger), defined as Itrigger = Iloss × 1.4.
5	Blue and red shrimp	0.61	255	128	64	Geometric mean of REC: Blim as 0.25 BMSY (=BF0.1)	New assessment
6_7	Blue and red shrimp	0.54	1020	450	225	Segreg SR of REC: Blim as 0.25 BMSY (=BF0.1)	from EWG 25-09
8_9_10_11	Blue and red shrimp	0.40	694	347	174	Geometric mean of REC: Blim as 0.25 BMSY (=BF0.1)	New assessment
8_9_10_11	Giant red shrimp	0.49	618	309	154	Geometric mean of REC: Blim as 0.25 BMSY (=BF0.1)	Updated reference points

Source: Own elaborations.

3 SUMMARY SHEETS

3.1 Summary sheet for European hake in GSAs 1, 5, 6, 7

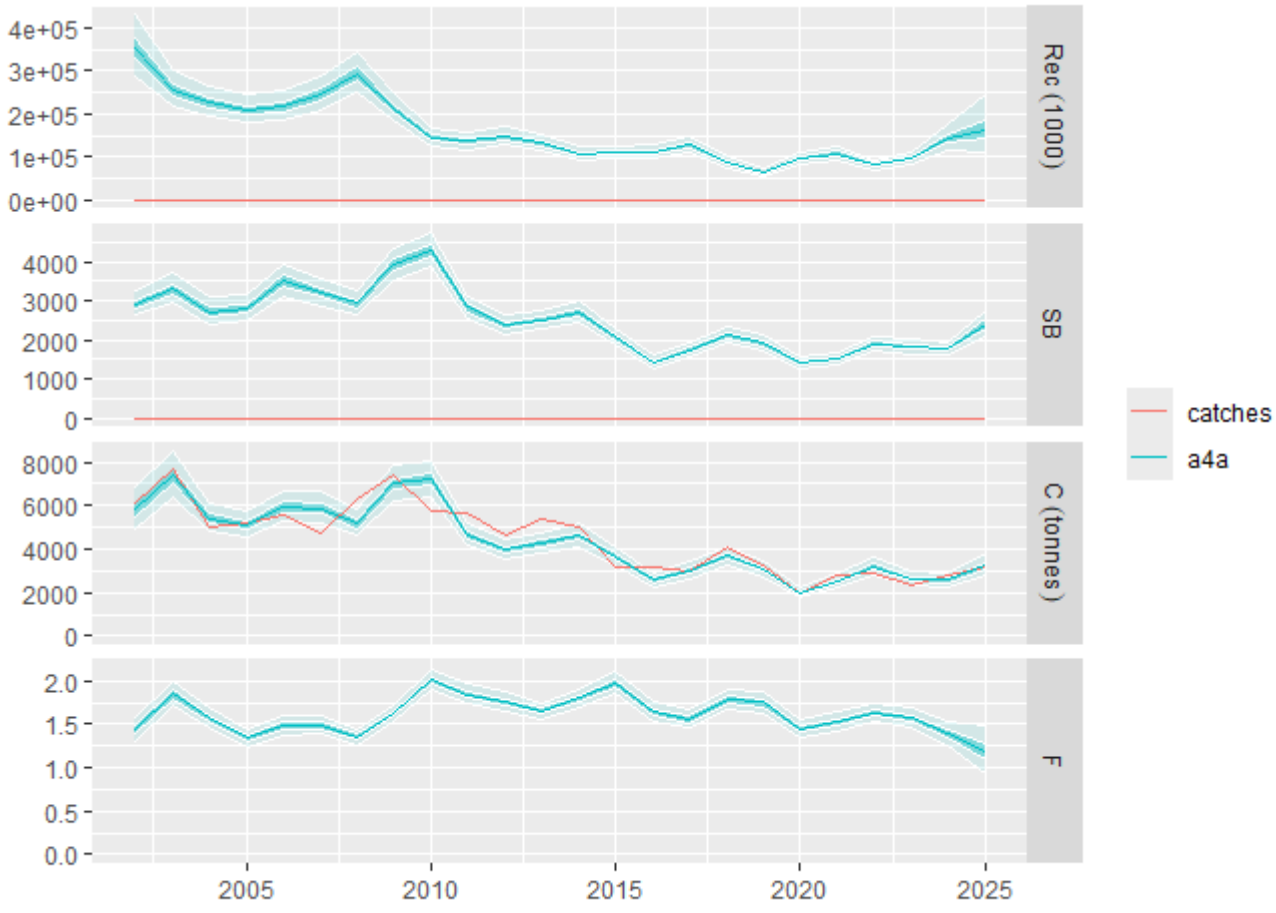
STECF advice on stock status

STECF EWG 26-09 advises that when MSY considerations are applied the fishing mortality in 2027 should be no more than 0.61 (FMSY proxy: Fmax).

Stock development over time

Catches and SSB of European hake show a decreasing trend from 2009 to 2020, with some oscillations in the time series since then. SSB is showing a slow increasing pattern since 2020. The assessment shows a general long term declining trend in the number of recruits until 2022, from when a positive trend is estimated. Fbar (1-3) shows oscillations across the historic period, with a decreasing trend since 2022. The estimated Fbar in 2025 is the lowest since 2002 (Fbar=1.17).

Figure 3.1.1. European hake in GSAs 1, 5, 6, 7: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (Blue lines). The red line represents the reported catches time series.



Source: Own elaborations.

Table 3.1.1. European hake in GSAs 1, 5, 6, 7: Assessment summary. Weights are in tonnes. Catches estimated by the model.

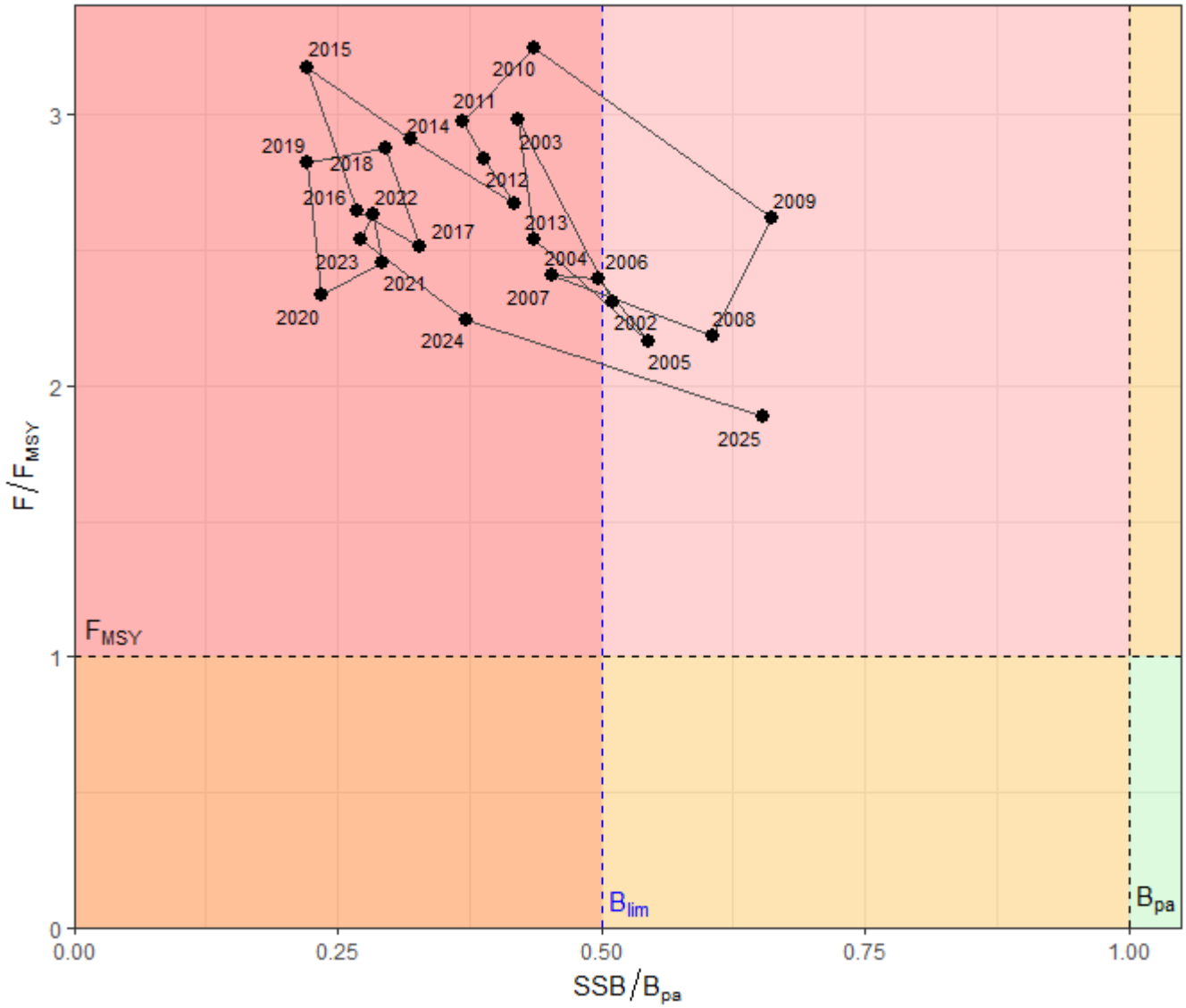
Year	Recruitment (1000s)	SSB (t)	Catch (t)	F(1-3)
2002	353638	2914	5766	1.43
2003	254288	3315	7421	1.85
2004	225876	2734	5451	1.57
2005	207911	2827	5148	1.34
2006	215338	3529	5943	1.48
2007	246963	3226	5885	1.49
2008	293986	2941	5178	1.35
2009	213380	3925	7008	1.62
2010	143756	4288	7218	2.01
2011	136812	2835	4671	1.84
2012	147593	2387	3965	1.76
2013	133034	2520	4275	1.65
2014	106377	2703	4608	1.80
2015	109526	2075	3680	1.97
2016	111694	1434	2592	1.64
2017	127915	1744	3031	1.56
2018	87087	2131	3694	1.78
2019	62757	1912	3082	1.75
2020	94780	1429	1975	1.45
2021	107087	1523	2543	1.52
2022	81463	1899	3184	1.63
2023	94869	1838	2649	1.57
2024	141068	1763	2586	1.39
2025	164889	2409	3260	1.17

Source: Own elaborations.

Stock and exploitation status

The level of fishing mortality in 2025 (1.17) is 1.91 times the reference point Fmax, used as a proxy of FMSY (= 0.61). SSB at the beginning of 2026 (4233 tons) is above Blim (3242 tons), but below Bpa (6484 tons) (F > FMSY, SSB > Blim, and SSB < Bpa). It is important to note that for HKE 1-5-6-7, spawning is assumed to occur at the beginning of the year. For this reason, the SSB in the assessment year 2025 must be estimated as the SSB at the beginning of 2026, that will represent the value of SSB after applying the F along the whole year 2025.

Figure 3.1.2. European hake in GSAs 1, 5, 6, 7: Kobe plot showing the stock trajectory relative to biological reference points (F/FMSY and SSB/Bpa). The blue dashed line indicates SSB/Blim. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below Blim, representing a risk of impaired recruitment.



Source: Own elaborations.

Catch scenarios

No short term forecast needed for this stock.

Basis of the advice

Table 3.1.2. European hake in GSAs 1, 5, 6, 7: The basis of the advice.

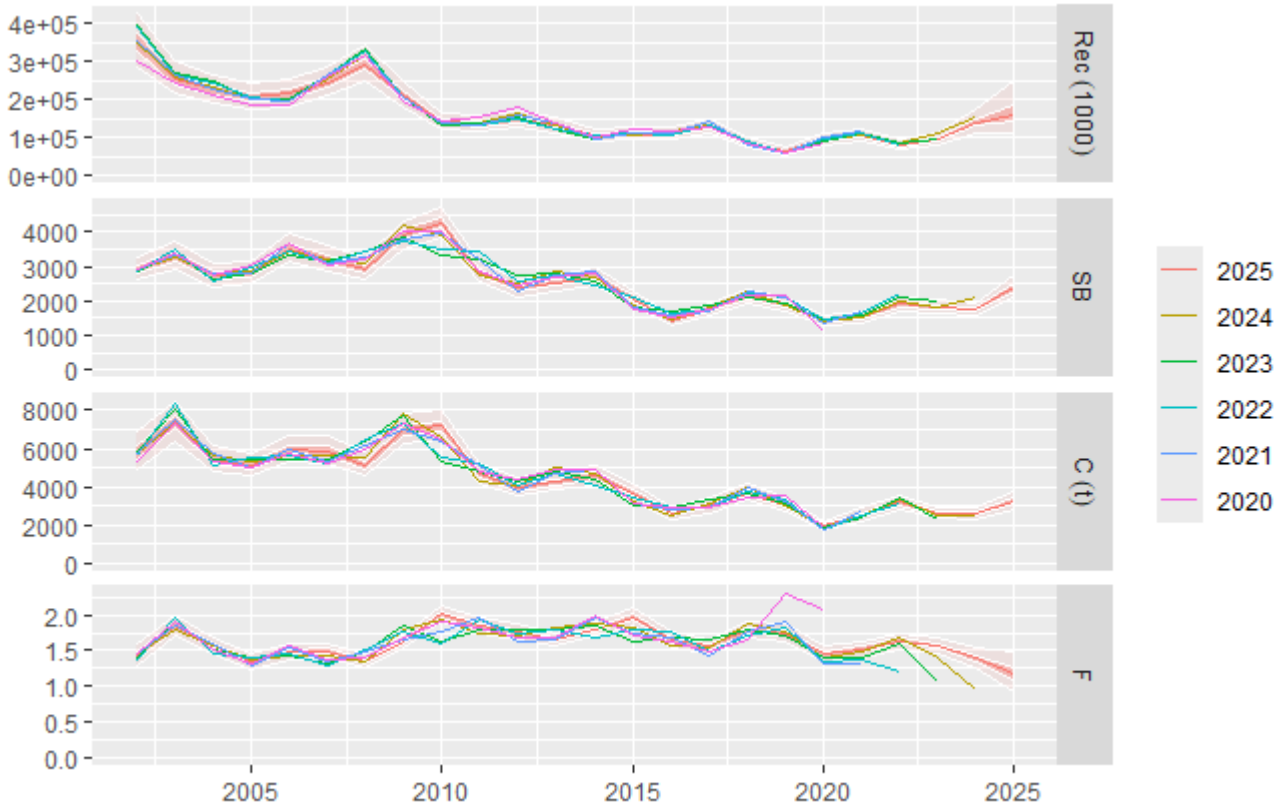
Advice basis	Western Mediterranean multiannual plan
Management plan	An EU Western Mediterranean multiannual plan (MAP) has been agreed by the EU for this stock (EU, 2019).

Source: Own elaborations.

Quality of the assessment

The a4a model used to assess the status of HKE 1-5-6-7 was modified based in the work developed by STECF EWG 25-06 and STECF EWG 25-09. The survey index data was corrected and extended to cover the period 2002-2025, and the model settings were modified to include the interaction between the age and the year to estimate the F. These modifications resulted in a better model performance (please see the retrospective plot in the figure below).

Figure 3.1.3. European hake in GSAs 1, 5, 6, 7: retrospective analysis.



Source: Own elaborations.

Issues relevant for the advice

The model residuals for the survey index at ages 0, 1 and 2 showed increasing pattern over time (or decreasing depending on the age), that could not be removed by modifying the model settings. This is a line of improvement that will require further work in the next assessment meeting.

Reference points

Table 3.1.3. European hake in GSAs 1, 5, 6, 7: Reference points, values, and their technical basis; the values from EWG 25-09 were retained.

Framework	Reference point	Value	Technical basis	Source
MSY approach	FMSY	0.61	Fmax as proxy for FMSY	STECF EWG 25-09
Precautionary approach	Blim	3242	Segreg as SR: Blim as the breakpoint of the Segreg	STECF EWG 25-09
Precautionary approach	Bpa	6484	Blim * 2	STECF EWG 25-09
Precautionary approach	BMSY	29845	BFmax	STECF EWG 25-09
Precautionary approach	Fpa		Not Defined	

Source: Own elaborations.

Basis of the assessment

Table 3.1.4. European hake in GSAs 1, 5, 6, 7: Basis of the assessment and advice.

Assessment type	Statistical catch at age
Input data	DCF commercial data (landings and discards) and scientific survey (MEDITS) data
Discards, BMS landings*, and bycatch	Discards included
Indicators	
Other information	
Working group	STECF EWG 26-09

*BMS (Below Minimum Size) landings

Source: Own elaborations.

.*Source: Own elaborations.*

History of the catch and landings

Table 3.1.5. European hake in GSAs 1, 5, 6, 7: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes.

year	ESP GSA 1 GNS	ESP GSA 1 LLS	ESP GSA 1 OTB	ESP GSA 1 GTR	ESP GSA 6 GNS	ESP GSA 6 LLS	ESP GSA 6 OTB	ESP GSA 6 GTR
2002	13	56	427	0	84	184	2566	0
2003	14	31	353	0	159	124	4350	0
2004	15	25	464	0	70	94	2986	0
2005	13	23	342	0	64	72	3337	0
2006	17	36	332	0	73	151	3403	0
2007	15	24	302	0	58	179	2302	0
2008	12	27	304	0	35	89	3218	0
2009	17	6	584	33	181	95	3548	23
2010	10	21	545	16	8	206	2602	6
2011	6	16	654	14	92	175	3017	39
2012	3	9	458	12	46	98	2665	28
2013	5	11	347	21	28	188	2845	46
2014	5	13	275	20	61	148	2400	33
2015	2	5	196	4	41	72	1644	21
2016	2	3	193	2	22	45	1790	24
2017	1	3	309	7	24	49	1686	38
2018	1	2	425	8	35	30	2499	18
2019	6	0	275	20	19	53	1540	45
2020	7	0	171	8	35	11	1060	28
2021	3	0	288	7	10	7	1749	17
2022	6	0	256	10	27	3	1516	33
2023	7	0	288	6	17	4	1197	22
2024	7	0	490	10	12	1	1510	17
2025	3	0	306	8	13	0	1986	25

year	ESP GSA 5 OTB	ESP GSA 7 LLS	ESP GSA 7 OTB	FRA GSA 7 GNS	FRA GSA 7 OTB	FRA GSA 7 GTR	FRA GSA 7 OTT
2002	95	146	218	0	0	0	0
2003	48	119	191	0	0	0	0
2004	63	82	99	0	0	0	0
2005	110	98	126	0	0	0	0
2006	125	151	109	0	0	0	0
2007	185	130	106	0	0	0	0
2008	128	96	203	0	0	0	0
2009	83	100	245	247	0	0	0
2010	119	50	146	141	1766	9	43
2011	91	22	115	190	1161	4	2
2012	68	18	162	173	831	6	1
2013	122	18	198	209	1193	3	119
2014	124	24	202	194	1348	18	105
2015	102	7	121	95	850	8	42
2016	70	4	117	106	632	3	163
2017	73	6	89	141	399	4	199
2018	143	8	80	91	434	5	271
2019	124	8	65	243	445	47	322
2020	89	2	34	131	189	22	176
2021	82	3	39	91	218	53	212
2022	77	4	81	78	282	45	452
2023	50	0	56	72	236	47	368
2024	95	0	37	59	202	34	290
2025	102	0	54	66	232	17	388

Source: MS data submission under the 2026 Mediterranean and Black Sea data call - MARE/D1/CO (2026).

Partial Fishing Mortality by fleet and GSA

Table 3.1.6. European hake in GSAs 1, 5, 6, 7: Partial Fishing Mortality by country, gear and GSA (average over 3 most recent years).

age	ESP GSA 1 GNS_LLS	ESP GSA 1 GTR	ESP GSA 1 OTB	ESP GSA 6 GNS	ESP GSA 6 GTR	ESP GSA 6 LLS	ESP GSA 6 OTB
0	0.000	0.000	0.016	0.000	0.000	0.000	0.072
1	0.001	0.000	0.184	0.001	0.004	0.000	0.792
2	0.006	0.004	0.188	0.018	0.045	0.001	0.703
3	0.000	0.022	0.099	0.014	0.028	0.005	0.582
4	0.000	0.015	0.038	0.003	0.004	0.006	0.260
5	0.000	0.000	0.003	0.000	0.001	0.001	0.033

age	ESP GSA 5 OTB	ESP GSA 7 LLS	ESP GSA 7 OTB	FRA GSA 7 GNS	FRA GSA 7 GTR	FRA GSA 7 OTB	FRA GSA 7 OTT
0	0.001	0	0.000	0.000	0.000	0.013	0.021
1	0.037	0	0.018	0.004	0.004	0.057	0.087
2	0.049	0	0.040	0.114	0.128	0.224	0.349
3	0.036	0	0.035	0.013	0.012	0.087	0.132
4	0.009	0	0.004	0.003	0.001	0.013	0.019
5	0.005	0	0.000	0.001	0.000	0.002	0.004

Source: Own elaborations.

3.2 Summary sheet for Deep water rose shrimp in GSA 1

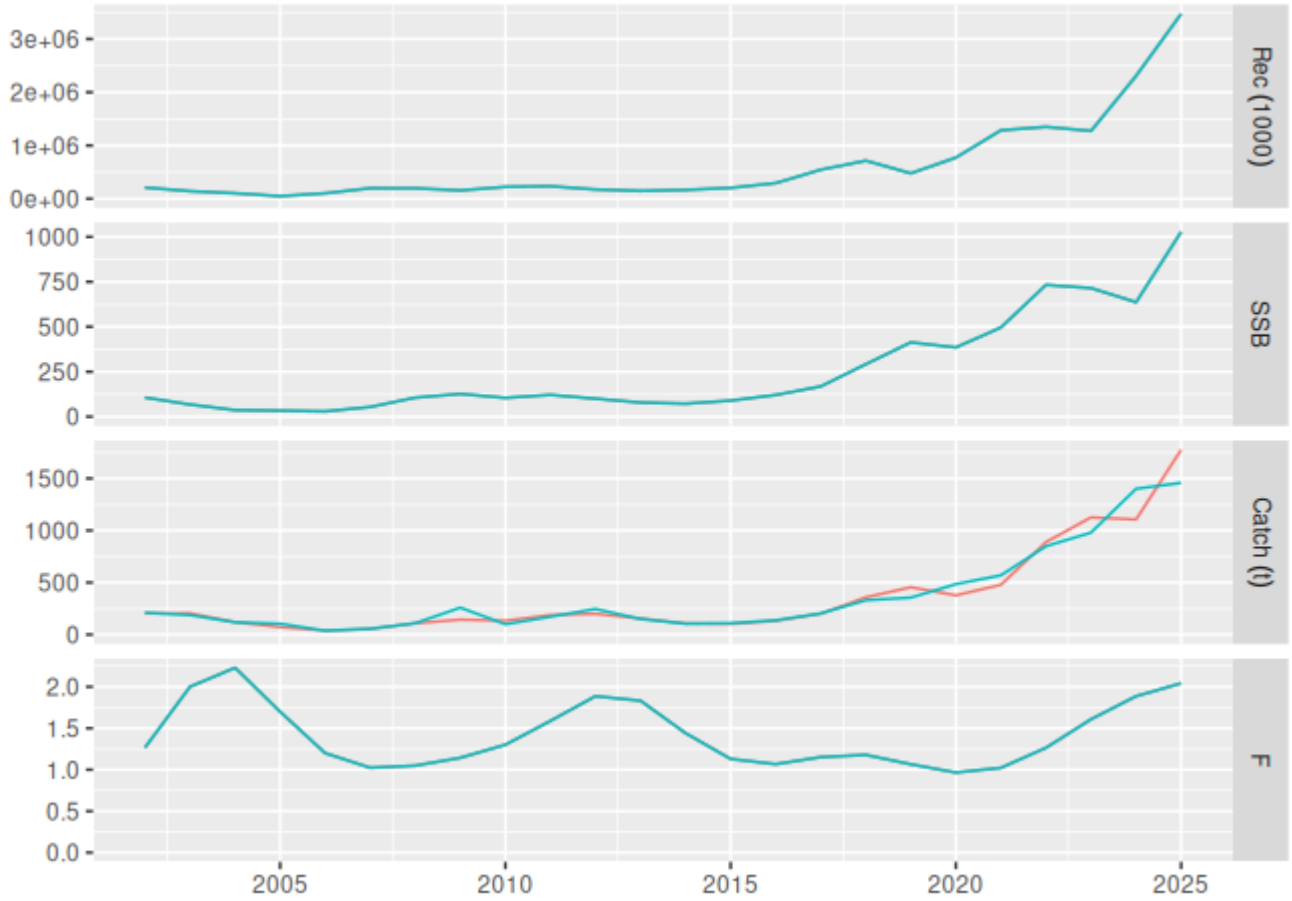
STECF advice on stock status

STECF EWG 26-09 did not provide any advice for this stock. The recent dynamics of the stock with a very fast increase of catch, biomass and recruitment is likely partially driven by external factors that are not well captured by the stock assessment model.

Stock development over time

Catches, SSB have been rapidly increasing since the second half of the 2010s, especially since 2020. This seems to result from large recruitments in the period. Despite some oscillations, F has been decreasing till 2020 but is increasing again for the last years.

Figure 3.2.1. Deep water rose shrimp in GSA 1: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (Blue lines). The red line represents the reported catches time series.



Source: Own elaborations.

Table 3.2.1. Deep water rose shrimp in GSA 1: Assessment summary. Weights are in tonnes. Catches estimated by the model.

Year	Recruitment (1000s)	SSB (t)	Catch (t)	F(1-2)
2002	210212	107	204	1.27
2003	142114	68	205	2.00
2004	103261	36	119	2.23
2005	48123	34	73	1.70
2006	102448	29	39	1.20
2007	197131	54	54	1.02
2008	196621	106	109	1.05
2009	156158	126	144	1.14
2010	222493	105	133	1.30
2011	234811	121	188	1.59
2012	173653	100	200	1.89
2013	146875	79	155	1.83
2014	165388	72	107	1.44
2015	204164	89	102	1.13
2016	292583	121	132	1.07
2017	544531	168	201	1.15
2018	714101	292	358	1.18
2019	476761	413	455	1.07
2020	772656	385	377	0.97
2021	1285590	496	479	1.02
2022	1349771	733	889	1.26
2023	1273213	715	1126	1.61
2024	2307153	636	1106	1.89
2025	3472113	1028	1775	2.04

Source: Own elaborations.

Stock and exploitation status

No biomass reference points were estimated for this stock. While a F_{MSY} reference point was reported by STECF EWG 25-09 using $F_{0.1}$ proxy, STECF EWG 26-09 considers that recurrent issues of the assessment hinder the use of such proxy.

Catch scenarios

No short term forecast needed for this stock.

Basis of the advice

Table 3.2.2. Deep water rose shrimp in GSA 1: The basis of the advice.

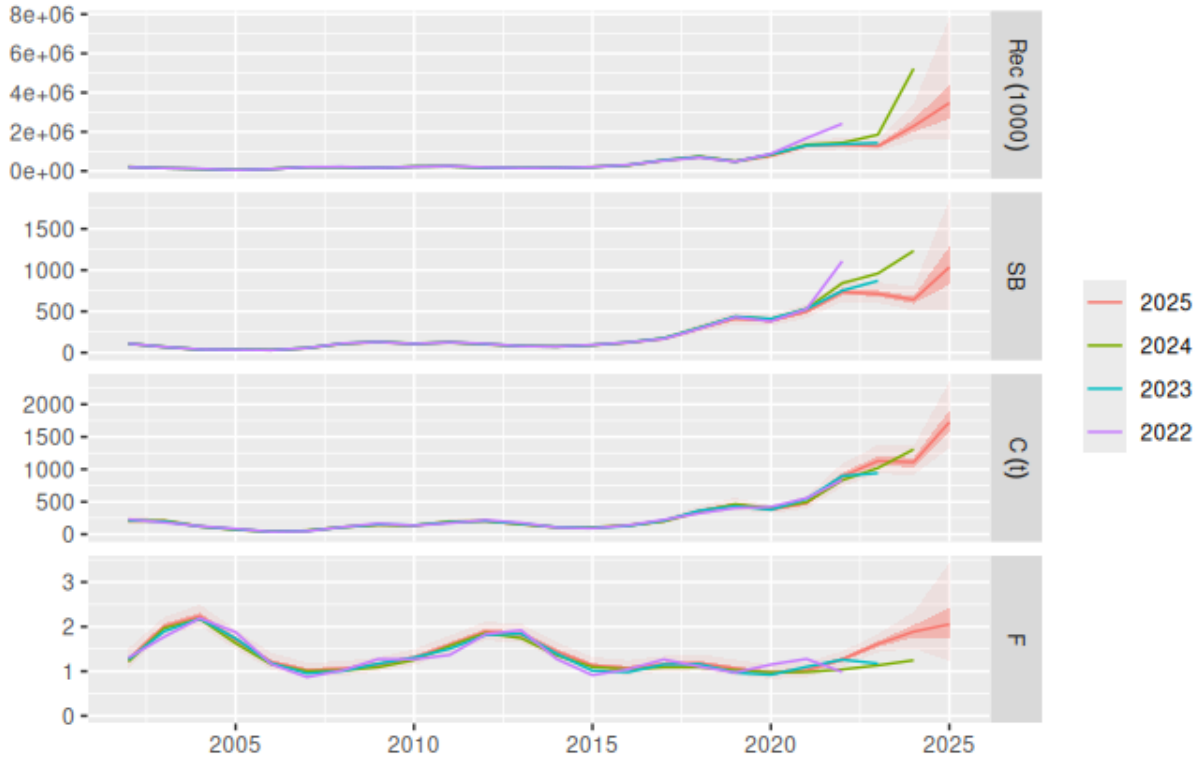
Advice basis	Western Mediterranean multiannual plan
Management plan	An EU Western Mediterranean multiannual plan (MAP) has been agreed by the EU for this stock (EU, 2019).

Source: Own elaborations.

Quality of the assessment

Similarly to last year, the model was assessed with a a4a model. The model was modified in two ways. First, the t_0 correction used to convert length to age during the data preparation was slightly modified, producing a shift in absolute values of F, SSB and R. Secondly, the specification of the fishing mortality submodel was slightly modified to give more flexibility to the model. This latest modifications enhanced the residual patterns. Despite this, as last year, the EWG 26-09 concluded that the dynamics of this stock cannot be fully explained by the current assessment. In recent years, the stock has shown extremely high productivity, with marked increases in biomass, recruitment, and catches.

Figure 3.2.2. Deep water rose shrimp in GSA 1: retrospective analysis.



Source: Own elaborations.

Issues relevant for the advice

No additional relevant issues for the advice.

Reference points

Table 3.2.3. Deep water rose shrimp in GSA 1: Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY Btrigger		Not Defined	
MSY approach	FMSY		Not Defined	
Precautionary approach	Blim		Not Defined	
Precautionary approach	Bpa		Not Defined	
Precautionary approach	BMSY		Not Defined	
Precautionary approach	Fpa		Not Defined	

Source: Own elaborations.

Basis of the assessment

Table 3.2.4. Deep water rose shrimp in GSA 1: Basis of the assessment and advice.

Assessment type	Statistical catch at age
Input data	DCF commercial data (landings and discards) and scientific survey (MEDITS) data
Discards, BMS landings*, and bycatch	Discards included
Indicators	
Other information	
Working group	STECF EWG 26-09

*BMS (Below Minimum Size) landings

Source: Own elaborations.

History of the catch and landings

Table 3.2.5. Deep water rose shrimp in GSA 1: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes. Almost all catch arise from OTB, small values were reported for other gears but are likely misreporting.

year	Bottom otter trawl GSA 1 ESP	Trammel nets GSA 1 ESP	Other GSA 1 ESP	Longlines GSA 1 ESP	Gillnets GSA 1 ESP
2002	210	0	0	0	0
2003	187	0	0	0	0
2004	118	0	0	0	0
2005	105	0	0	0	0
2006	38	0	0	0	0
2007	56	0	0	0	0
2008	109	0	0	0	0
2009	256	0	0	0	0
2010	99	0	0	0	0
2011	172	0	0	0	0
2012	243	0	0	0	0
2013	150	0	0	0	0
2014	105	0	0	0	0
2015	110	0	0	0	0
2016	138	0	0	0	0
2017	203	0	0	0	0
2018	330	0	0	0	0
2019	355	0	0	0	0
2020	485	0	0	0	0
2021	569	0	0	0	0
2022	849	0	0	0	0
2023	980	0	0	0	0
2024	1400	0	0	0	0
2025	1458	0	0	0	0

Source: MS data submission under the 2026 Mediterranean and Black Sea data call - MARE/D1/CO (2026).

Partial Fishing Mortality by fleet and GSA

Since this stock is only caught by Spanish OTB in GSA 1, there is no partial mortality.

3.3 Summary sheet for Deep water rose shrimp in GSAs 5, 6, 7

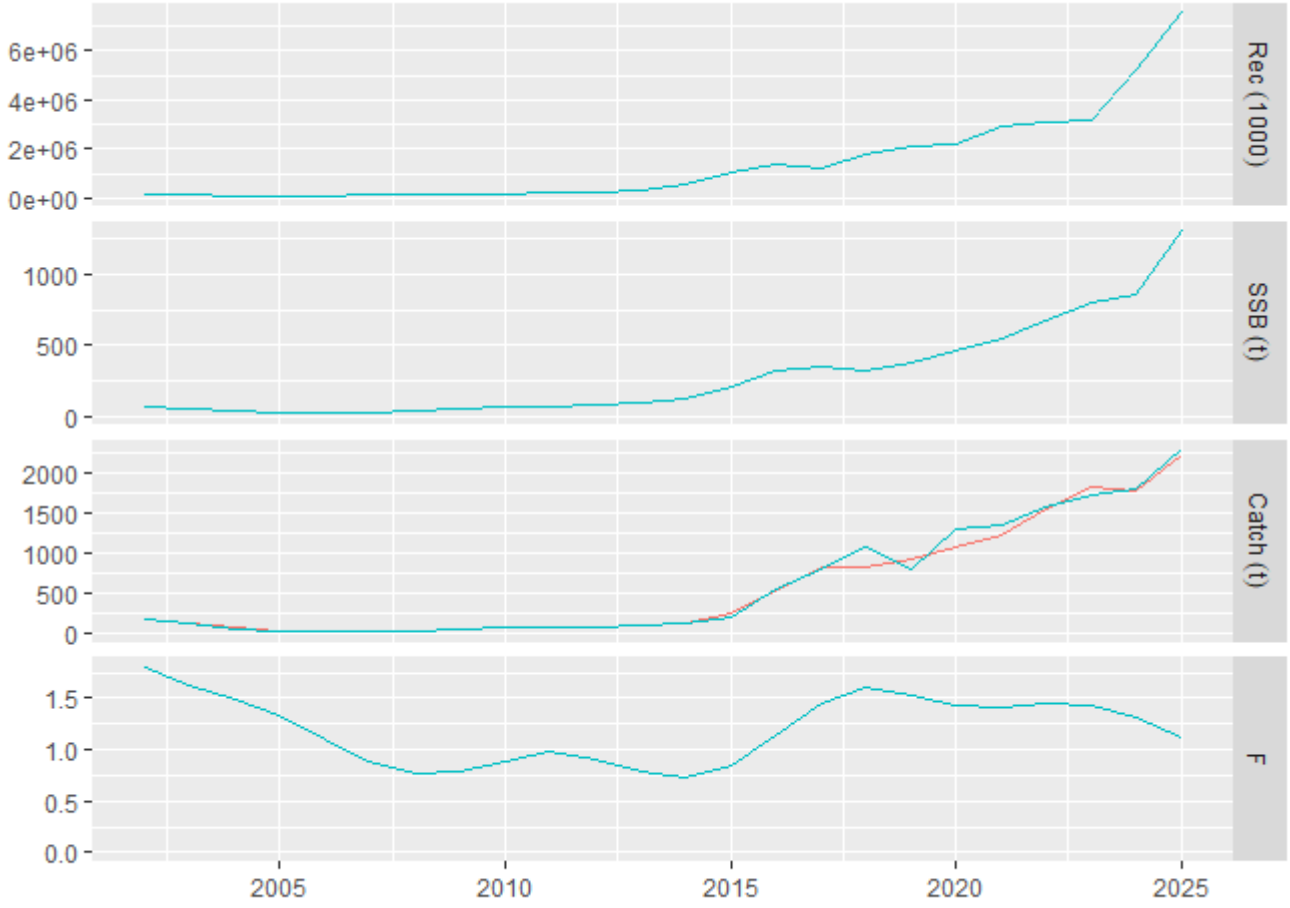
STECF advice on stock status

STECF EWG 26-09 gave no advice due to considerations on the dynamics of the stock that are not being fully explained by the stock assessment.

Stock development over time

Catches show a constant increasing pattern since 2016, with a small drop in 2019. SSB is increasing since 2022. F has reached its zenith in 2017 and has been decreasing since then, also during the increase of catches in the last two years.

Figure 3.3.1. Deep water rose shrimp in GSAs 5, 6, 7: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (Blue lines).



Source: Own elaborations.

Table 3.3.1. Deep water rose shrimp in GSAs 5, 6, 7: Assessment summary. Weights are in tonnes. Catches estimated by the model.

Year	Recruitment (1000s)	SSB (t)	Catch (t)	F(1-2)
2002	170146	61	183	1.80
2003	103282	48	133	1.63
2004	55868	32	75	1.49
2005	48764	21	43	1.32
2006	53455	19	30	1.10
2007	117674	21	27	0.89
2008	121228	39	43	0.77
2009	142316	52	61	0.78
2010	162649	62	77	0.89
2011	185952	66	91	0.97
2012	206784	73	96	0.91
2013	333798	90	101	0.78
2014	566369	128	134	0.74
2015	1074569	202	251	0.85
2016	1328684	316	534	1.13
2017	1205441	354	825	1.46
2018	1809472	316	820	1.60
2019	2136630	381	920	1.53
2020	2159397	466	1072	1.43
2021	2923589	539	1225	1.41
2022	3114510	675	1538	1.44
2023	3171812	799	1829	1.43
2024	5199231	863	1774	1.30
2025	7539188	1305	2223	1.12

Source: Own elaborations.

Stock and exploitation status

No biomass reference points were estimated for this stock. While a FMSY reference point was reported by STECF EWG 25-09 using F0.1 proxy, STECF EWG 26-09 considers that recurrent issues of the assessment hinder the use of such proxy.

Catch scenarios

No short term forecast needed for this stock.

Basis of the advice

Table 3.3.2. Deep water rose shrimp in GSAs 5, 6, 7: The basis of the advice.

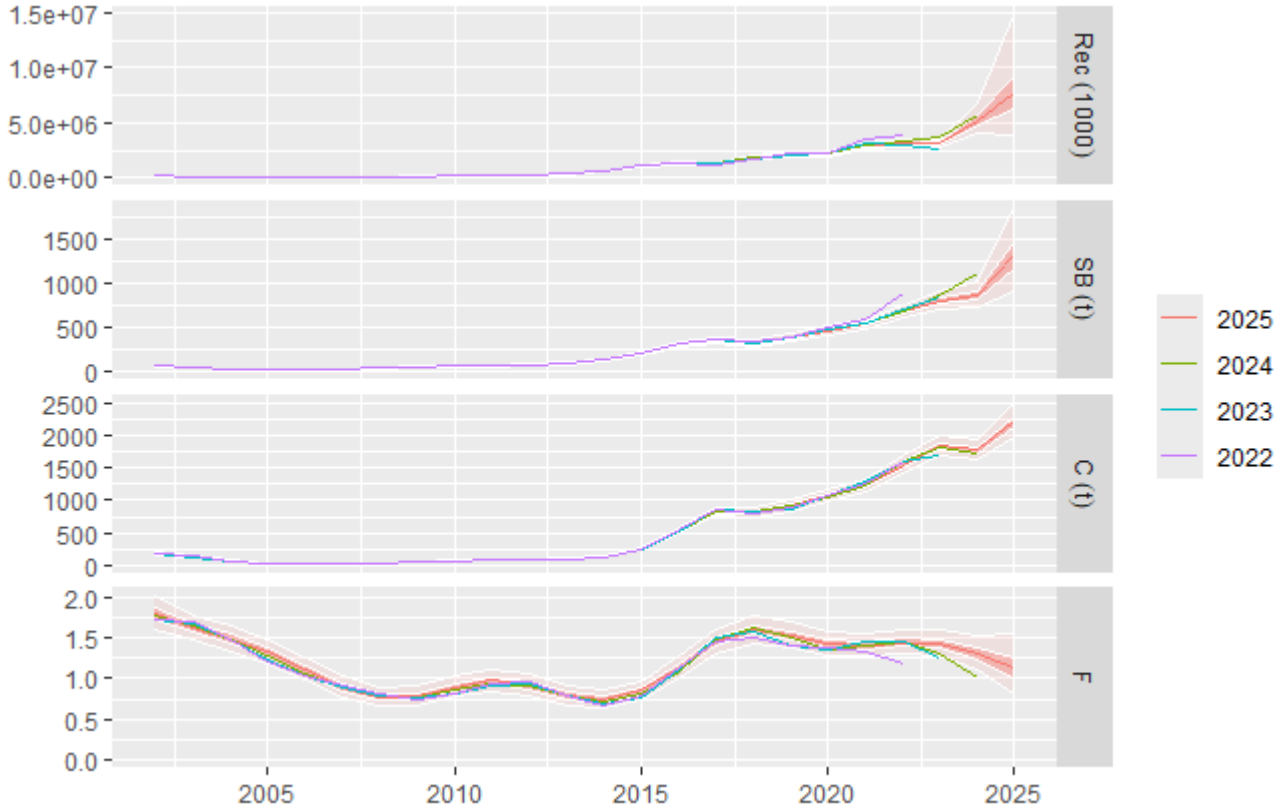
Advice basis	Western Mediterranean multiannual plan
Management plan	An EU Western Mediterranean multiannual plan (MAP) has been agreed by the EU for this stock (EU, 2019).

Source: Own elaborations.

Quality of the assessment

A new assessment model was used, as the update of the previous model lead to retrospective patterns deemed unacceptable. It is still a separable model. This was necessary as the information in the tail of the time series was sparse due to the missing MEDITS survey in 2022. In combination with a change in fishing pressure the model needed less freedom to lead to appropriate results. As the years go on, it is expected that the model will change again. All the diagnostics were considered acceptable.

Figure 3.3.2. Deep water rose shrimp in GSAs 5, 6, 7: retrospective analysis.



Source: Own elaborations.

Issues relevant for the advice

Changed assessment model as outlined above.

Reference points

Table 3.3.3. Deep water rose shrimp in GSAs 5, 6, 7: Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	FMSY		Not Defined	
Precautionary approach	Blim		Not Defined	
Precautionary approach	Bpa		Not Defined	
Precautionary approach	BMSY		Not Defined	
Precautionary approach	Fpa		Not Defined	

Source: Own elaborations.

Basis of the assessment

Table 3.3.4. Deep water rose shrimp in GSAs 5, 6, 7: Basis of the assessment and advice.

Assessment type	Statistical catch at age
Input data	DCF commercial data (landings and discards) and scientific survey (MEDITS) data
Discards, BMS landings*, and bycatch	Discards included
Indicators	
Other information	
Working group	STECF EWG 26-09

*BMS (Below Minimum Size) landings

Source: Own elaborations.

History of the catch and landings

Table 3.3.5. Deep water rose shrimp in GSAs 5, 6, 7: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes.

	catch (t)			
Year	OTB SPAIN GSA 5	OTB SPAIN GSA 6	OTB SPAIN GSA 7	OTB FRANCE GSA 7
2002	36.18	144.08	0	0
2003	22.13	116.02	0	0
2004	6.53	66.19	0	0
2005	1.6	44.67	0	0
2006	1.01	25.18	0	0
2007	1.39	28.81	0	0
2008	5.2	38.95	0.14	0
2009	5.11	49.09	0.14	0
2010	6.25	72.17	0.36	3.77
2011	4.66	68.53	1.22	6.21
2012	4.58	86.35	2.25	3.42
2013	6.52	87.57	2.59	2.38
2014	5.6	133.53	3.4	4.27
2015	7.59	177.44	4.76	13.68
2016	11.07	477.24	27.22	42.89
2017	68.63	642.73	36.51	46.6
2018	101.16	917.05	17.9	37.73
2019	59.76	707.57	7.29	24.53
2020	67.94	1113.87	15.99	102.48
2021	81.99	1116.82	29.01	118.23
2022	59.35	1386.61	22.54	101.66
2023	58.26	1596.78	19.38	60.02
2024	53.81	1663.26	18.18	69.22
2025	62.38	2095.51	23.65	107.87

Source: MS data submission under the 2026 Mediterranean and Black Sea data call - MARE/D1/CO (2026).

Partial Fishing Mortality by fleet and GSA

Table 3.3.6. Deep water rose shrimp in GSAs 5, 6, 7: Partial Fishing Mortality by country, gear and GSA (average over 3 most recent years).

age	Bottom otter trawl GSA 5 ESP	Bottom otter trawl GSA 6 ESP	Bottom otter trawl GSA 7 ESP	Bottom otter trawl GSA 7 FRA
0	0.000006	0.000092	0.000001	0.000003
1	0.03572	0.782148	0.001758	0.006519
2	0.012565	1.560397	0.035886	0.135952
3	0.000026	0.244554	0.042248	0.160175

Source: Own elaborations.

3.4 Summary sheet for Red mullet in GSA 1

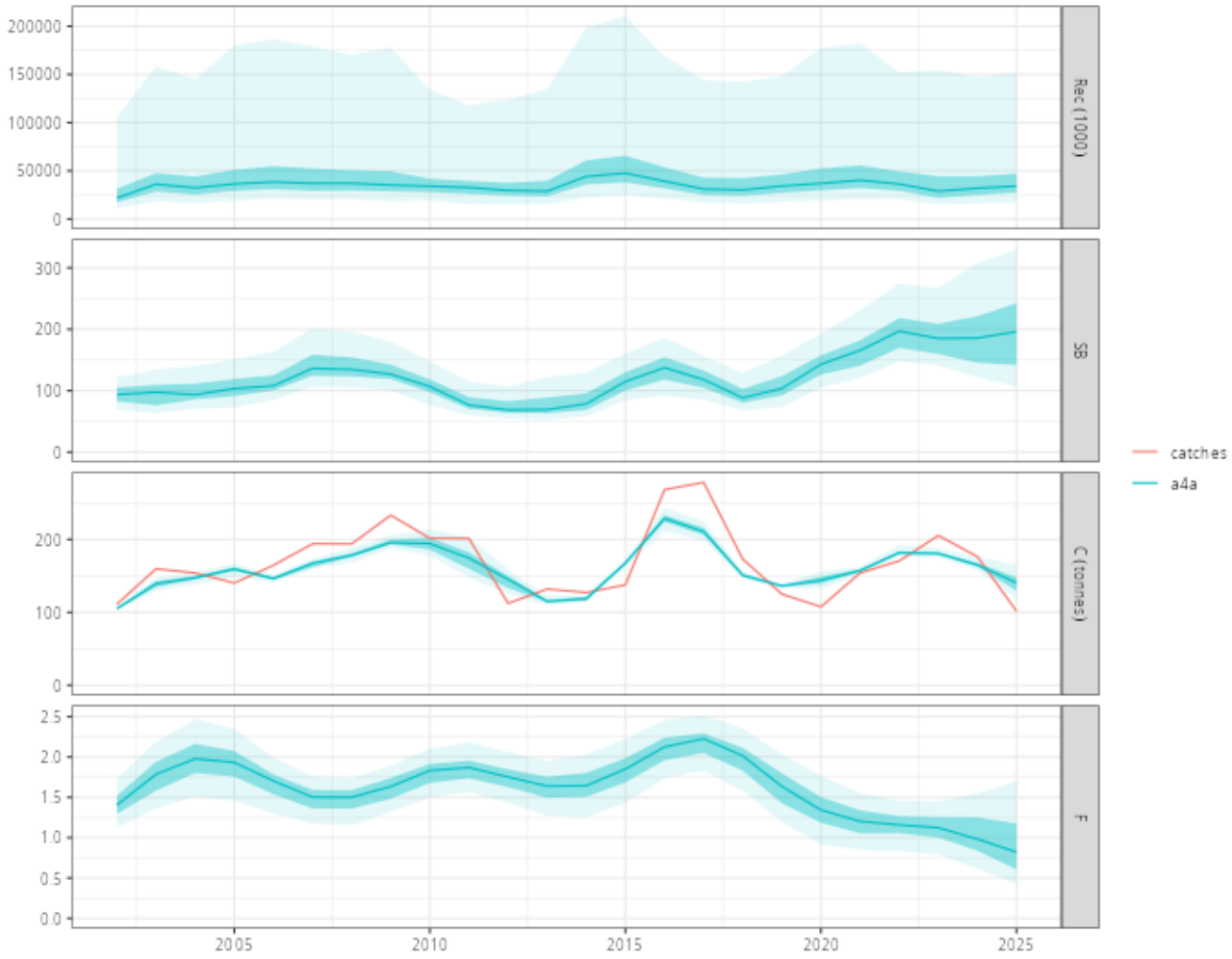
STECF advice on stock status

STECF EWG 26-09 report that when MSY considerations are applied the fishing mortality in 2027 should be no more than 0.59.

Stock development over time

Catches show a steady pattern the whole time series, except for a small peak in 2016. SSB is increasing since 2022. F is stable up to 2017 and has been decreasing since.

Figure 3.4.1. Red mullet in GSA 1: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (Blue lines). The red line represents the reported catches time series.



Source: Own elaborations.

Table 3.4.1. Red mullet in GSA 1: Assessment summary. Weights are in tonnes. Catches estimated by the model.

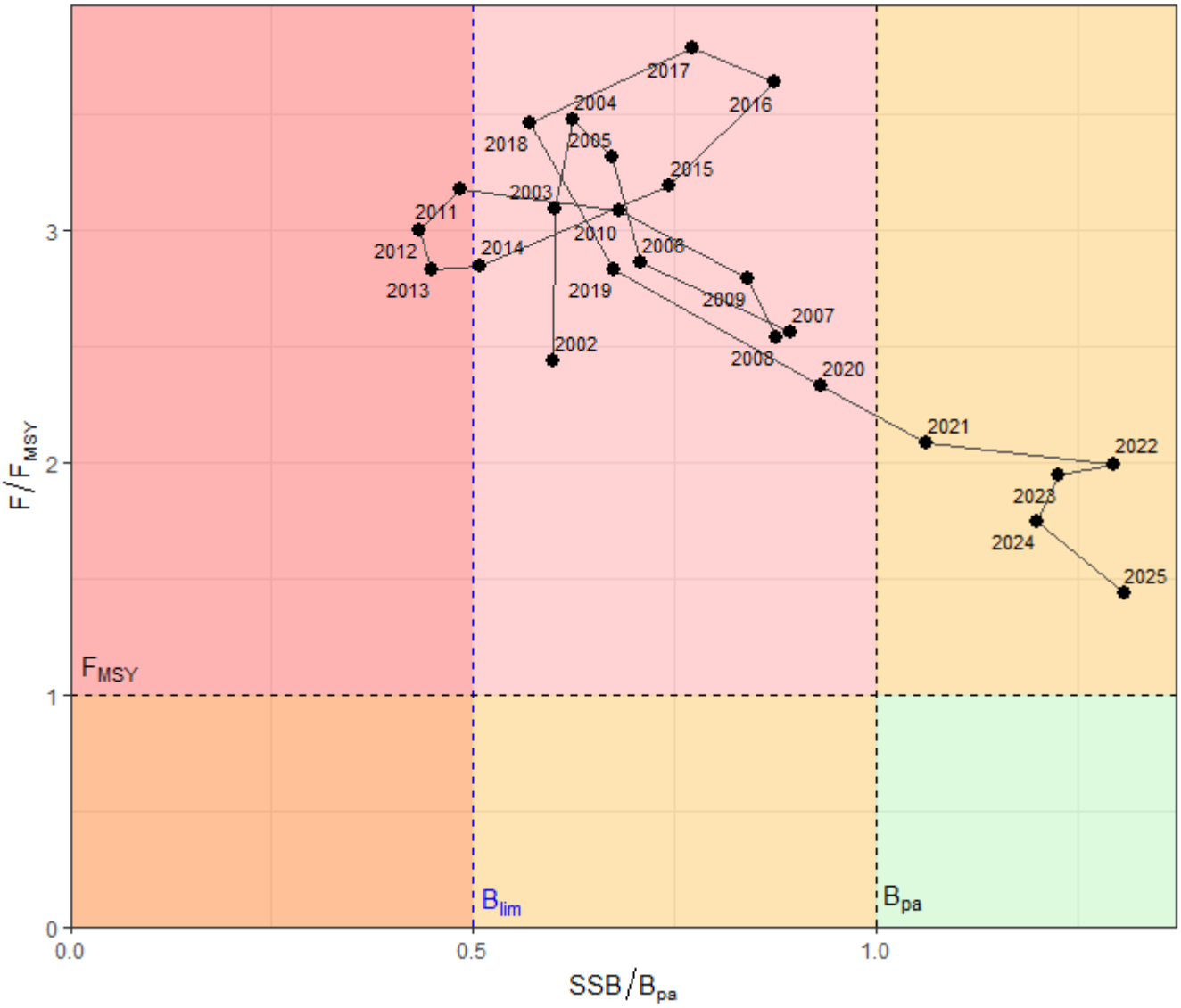
Year	Recruitment (1000s)	SSB (t)	Catch (t)	F(1-3)
2002	21895	94	105	1.40
2003	36152	98	139	1.79
2004	32413	94	147	1.98
2005	36441	103	159	1.93
2006	38477	108	146	1.70
2007	37106	136	167	1.50
2008	37112	135	178	1.50
2009	35248	127	196	1.63
2010	34082	107	194	1.83
2011	32709	77	174	1.87
2012	29687	69	145	1.75
2013	28915	69	115	1.64
2014	44196	79	119	1.64
2015	47545	115	168	1.85
2016	39278	137	229	2.12
2017	31183	118	211	2.23
2018	30254	88	151	2.01
2019	34243	104	136	1.64
2020	36975	143	144	1.34
2021	40318	166	157	1.20
2022	36324	197	182	1.16
2023	28913	185	181	1.12
2024	31983	186	165	0.98
2025	34217	196	141	0.82

Source: Own elaborations.

Stock and exploitation status

The current level of fishing mortality is slightly above the reference point F0.1, used as proxy of FMSY (0.59). SSB in 2025 is above Bpa (F > FMSY, SSB > Blim, and SSB > Bpa).

Figure 3.4.2. Red mullet in GSA 1: Kobe plot showing the stock trajectory relative to biological reference points (F/FMSY and SSB/Bpa). The blue dashed line indicates SSB/Blim. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below Blim, representing a risk of impaired recruitment.



Source: Own elaborations.

Catch scenarios

No short term forecast needed for this stock.

Basis of the advice

Table 3.4.2. Red mullet in GSA 1: The basis of the advice.

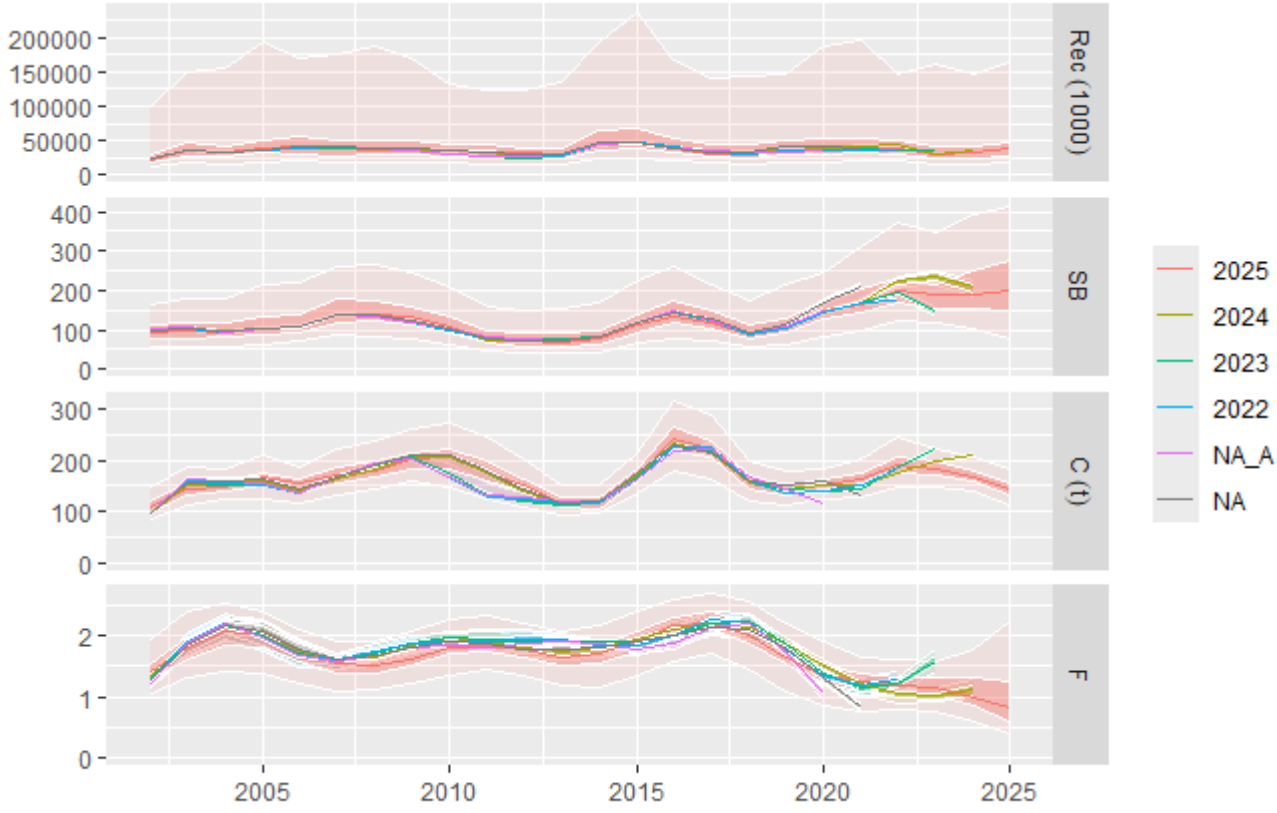
Advice basis	Western Mediterranean multiannual plan
Management plan	An EU Western Mediterranean multiannual plan (MAP) has been agreed by the EU for this stock (EU, 2019).

Source: Own elaborations.

Quality of the assessment

The same model as last year was used, several models were explored and although some of them were performing better, the change was not significant enough. So to be consistent with the working group we decided a conservative approach.

Figure 3.4.3. Red mullet in GSA 1: retrospective analysis.



Source: Own elaborations.

Issues relevant for the advice

The absent of age 0 in both the survey and catches makes the estimation of recruitment and its uncertainty a difficult task. This year a stochastic slicing was used to construct the age matrices.

Reference points

Table 3.4.3. Red mullet in GSA 1: Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	FMSY	0.59	F0.1 as proxy for FMSY	STECF EWG 25-09
Precautionary approach	Blim	75	Default based on 25% BF0.1 and GM recruitment	STECF EWG 25-09
Precautionary approach	Bpa	150	Blim * 2	STECF EWG 25-09
Precautionary approach	BMSY	300	BF0.1	STECF EWG 25-09
Precautionary approach	Fpa		Not Defined	

Source: Own elaborations.

Basis of the assessment

Table 3.4.4. Red mullet in GSA 1: Basis of the assessment and advice.

Assessment type	Statistical catch at age
Input data	DCF commercial data (landings and discards) and scientific survey (MEDITS) data
Discards, BMS landings*, and bycatch	Discards included
Indicators	
Other information	
Working group	STECF EWG 26-09

*BMS (Below Minimum Size) landings

Source: Own elaborations.

History of the catch and landings

Table 3.4.5. Red mullet in GSA 1: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes.

year	Bottom otter trawl GSA 1 ESP	Trammel nets GSA 1 ESP	Other GSA 1 ESP	Gillnets GSA 1 ESP	Longlines GSA 1 ESP
2002	101	10	0	0	0
2003	143	17	0	0	0
2004	142	12	0	0	0
2005	128	12	0	0	0
2006	151	13	0	0	0
2007	182	12	0	0	0
2008	181	13	0	0	0
2009	204	23	2	0	0
2010	187	14	1	0	0
2011	182	18	1	0	0
2012	75	34	1	0	0
2013	116	14	2	0	0
2014	126	1	1	0	0
2015	128	9	1	0	0
2016	188	78	1	0	0
2017	214	64	0	0	0
2018	151	22	0	0	0
2019	108	17	0	0	0
2020	93	14	1	0	0
2021	131	21	2	0	0
2022	140	27	3	1	0
2023	175	28	2	0	0
2024	149	22	6	0	0
2025	85	15	1	0	0

Source: MS data submission under the 2026 Mediterranean and Black Sea data call - MARE/D1/CO (2026).

Partial Fishing Mortality by fleet and GSA

Table 3.4.6. Red mullet in GSA 1: Partial Fishing Mortality by country, gear and GSA (average over 3 most recent years).

age	Bottom otter trawl GSA 1 ESP	Trammel nets GSA 1 ESP	Gillnets GSA 1 ESP	Other GSA 1 ESP	Longlines GSA 1 ESP
0	0.025	0.00001			
1	0.460	0.095			
2	0.928	0.203			
3	1.179	0.146			
4	0.765	0.066			

Source: Own elaborations.

3.5 Summary sheet for Red mullet in GSA 6

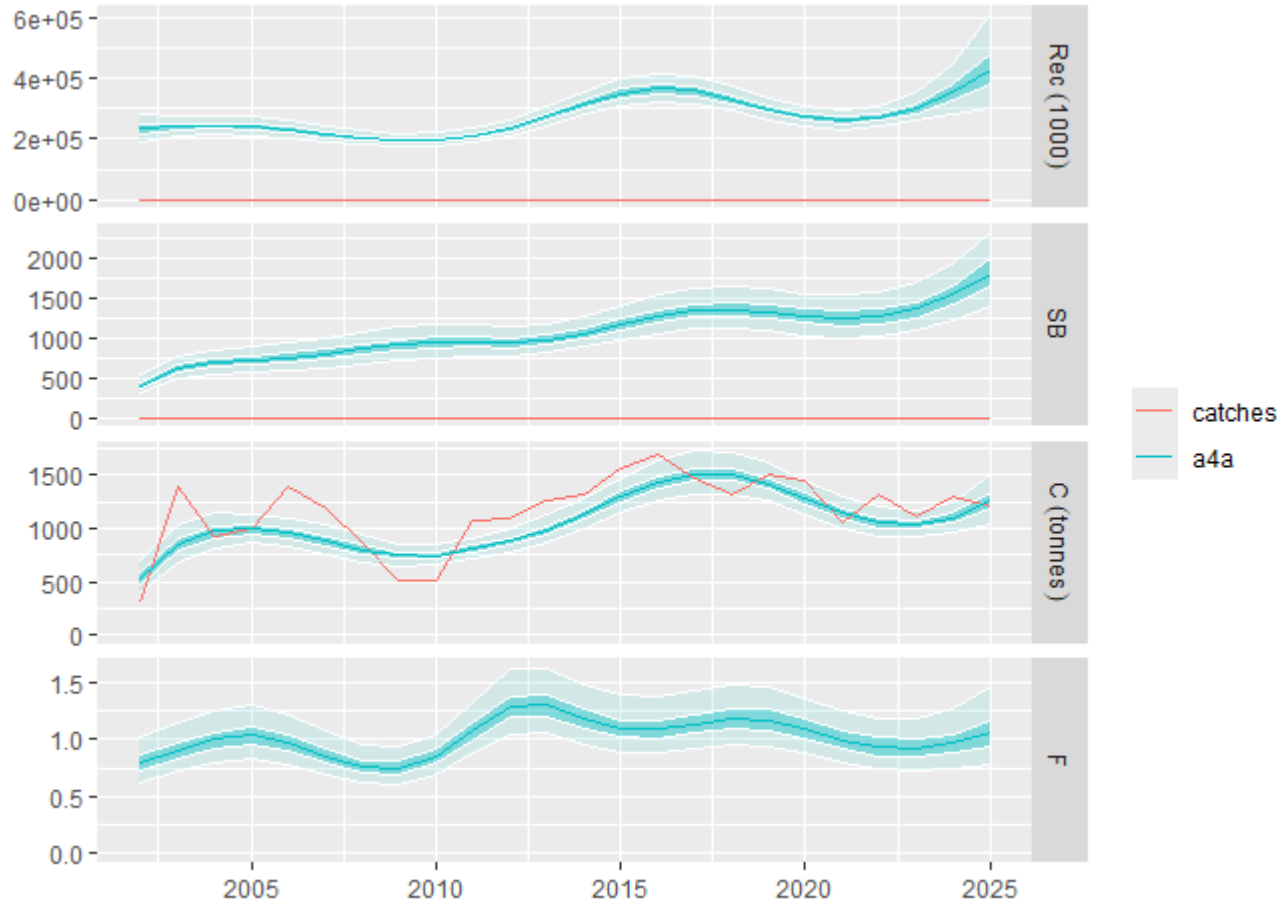
STECF advice on stock status

STECF EWG 26-09 advises that the estimated fishing mortality in 2025 (F = 1.04) exceeds the reference level of 0.76, corresponding to an F/F_{MSY} ratio of approximately 1.37. According to the status in 2025, the stock is overfished, although its spawning stock biomass remains above precautionary levels. Fishing mortality should therefore be no more than 0.76 in order to bring exploitation to a level consistent with MSY considerations.

Stock development over time

Recruitment, spawning stock biomass (SSB), and fishing mortality have shown increasing trends in recent years. In contrast, catches have fluctuated over the time series, with a declining trend in the most recent years and a further decrease observed in 2025.

Figure 3.5.1. Red mullet in GSA 6: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (Blue lines). The red line represents the reported catches time series.



Source: Own elaborations.

Table 3.5.1. Red mullet in GSA 6: Assessment summary. Weights are in tonnes. Catches estimated by the model.

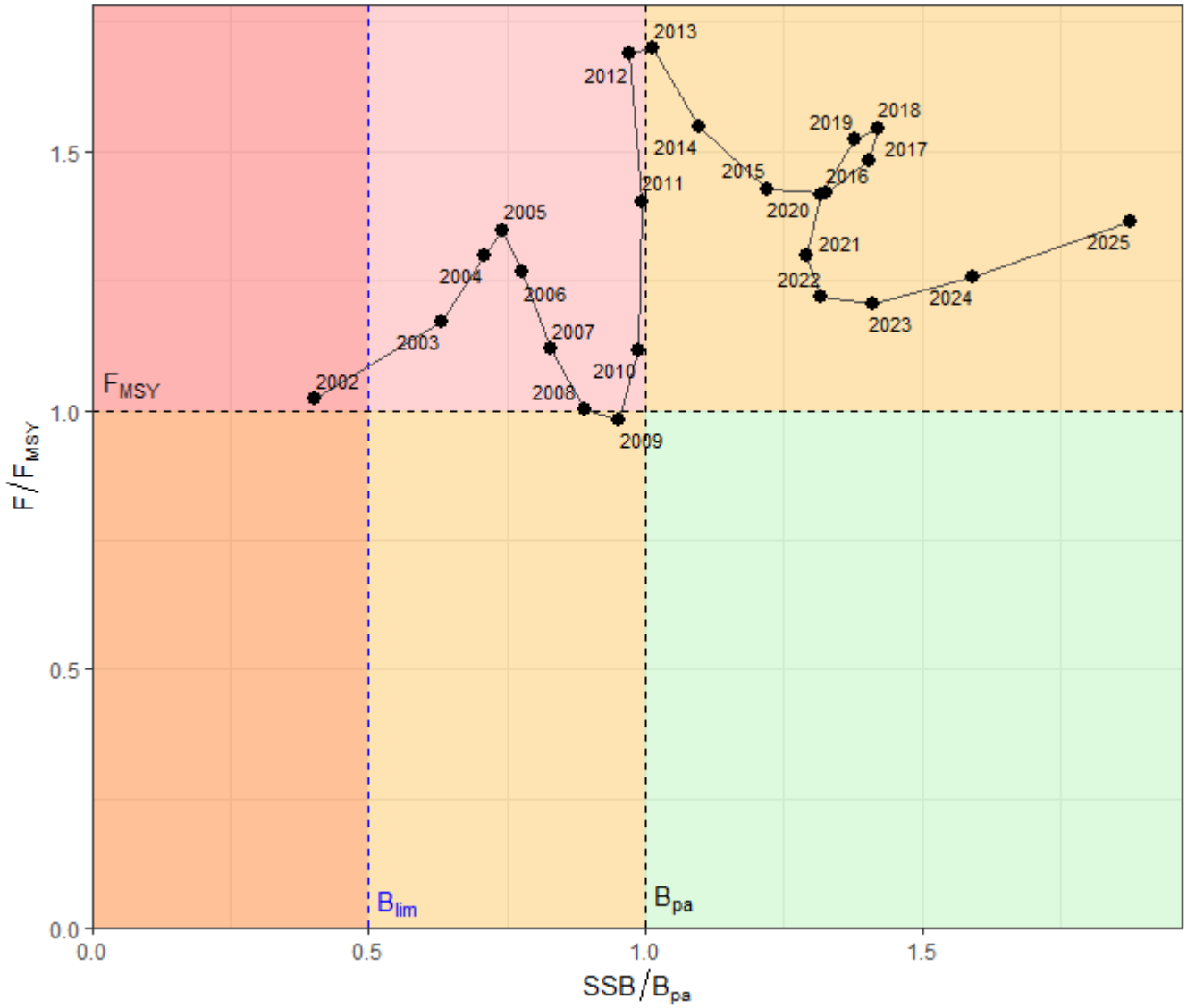
Year	Recruitment (1000s)	SSB (t)	Catch (t)	F(1-3)
2002	233416	388	527	0.78
2003	239571	608	852	0.89
2004	242711	682	975	0.99
2005	239784	714	1000	1.03
2006	230022	749	962	0.96
2007	216031	797	888	0.85
2008	202623	857	805	0.76
2009	194722	915	749	0.75
2010	196113	949	750	0.85
2011	209306	955	814	1.07
2012	235391	933	885	1.28
2013	272818	974	993	1.29
2014	315252	1055	1132	1.18
2015	350963	1173	1301	1.09
2016	367227	1277	1433	1.08
2017	358605	1349	1511	1.13
2018	331289	1364	1513	1.17
2019	298600	1324	1430	1.16
2020	273053	1267	1288	1.08
2021	262530	1242	1151	0.99
2022	271169	1267	1059	0.93
2023	301295	1358	1040	0.92
2024	353707	1532	1107	0.96
2025	426537	1805	1269	1.04

Source: Own elaborations.

Stock and exploitation status

The current level of fishing mortality (1.04) is above the reference point F0.1, used as proxy of FMSY (0.76). SSB in 2025 is above Bpa and below BMSY (F > FMSY, SSB > Blim, and SSB > Bpa).

Figure 3.5.2. Red mullet in GSA 6: Kobe plot showing the stock trajectory relative to biological reference points (F/FMSY and SSB/Bpa). The blue dashed line indicates SSB/Blim. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below Blim, representing a risk of impaired recruitment**.**



Source: Own elaborations.

Catch scenarios

No short term forecast needed for this stock.

Basis of the advice

Table 3.5.2. Red mullet in GSA 6: The basis of the advice.

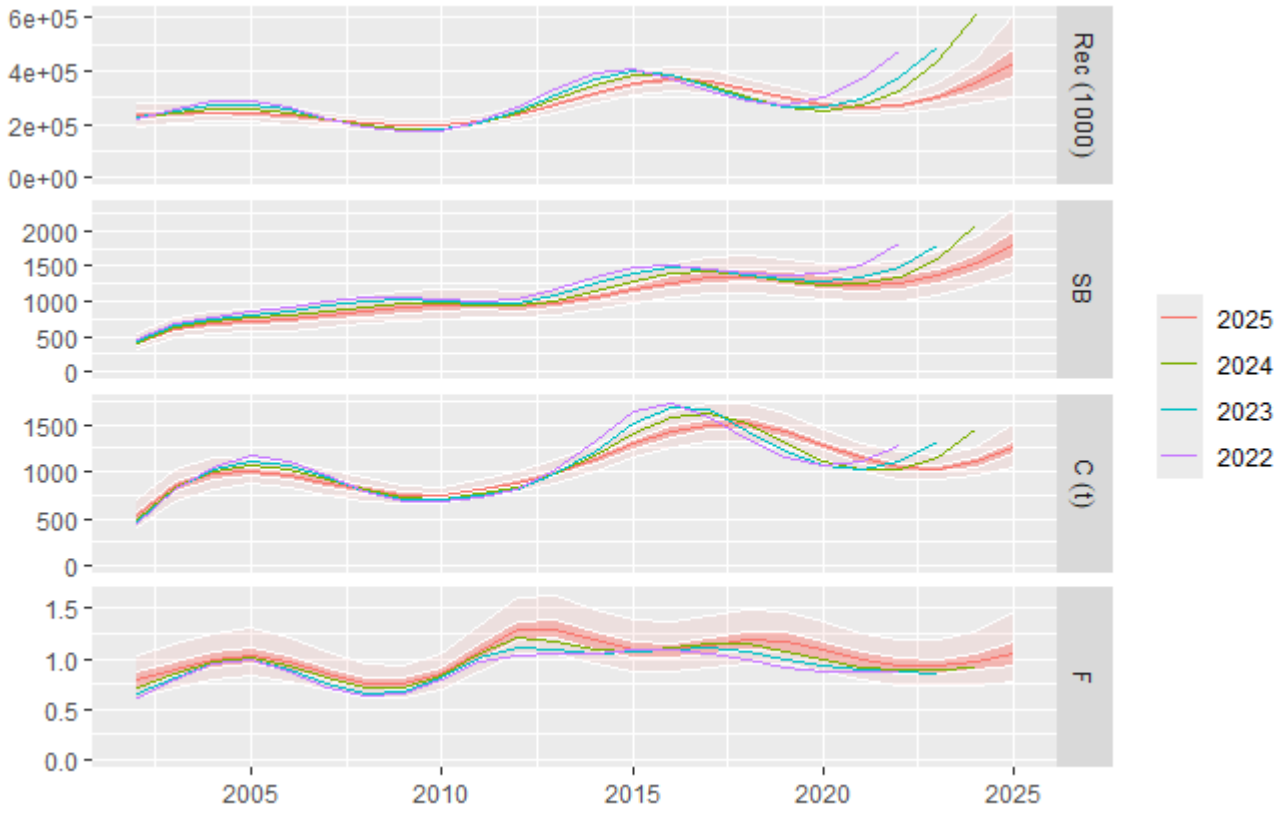
Advice basis	Western Mediterranean multiannual plan
Management plan	An EU Western Mediterranean multiannual plan (MAP) has been agreed by the EU for this stock (EU, 2019).

Source: Own elaborations.

Quality of the assessment

The assessment is an update of the last year model. All the diagnostics were considered acceptable.

Figure 3.5.3. Red mullet in GSA 6: retrospective analysis.



Source: Own elaborations.

Issues relevant for the advice

No major issues.

Reference points

Table 3.5.3. Red mullet in GSA 6: Reference points, values, and their technical basis, they were re-estimated in EWG25-09 as the assessment model had changed.

Framework	Reference point	Value	Technical basis	Source
MSY approach	FMSY	0.76	F0.1 as proxy for FMSY	STECF EWG 25-09
Precautionary approach	Blim	481	Default based on 25% BF0.1 and GM recruitment	STECF EWG 25-09
Precautionary approach	Bpa	962	Blim * 2	STECF EWG 25-09
Precautionary approach	BMSY	1926	BF0.1	STECF EWG 25-09
Precautionary approach	Fpa		Not Defined	

Source: Own elaborations.

Basis of the assessment

Table 3.5.4. Red mullet in GSA 6: Basis of the assessment and advice.

Assessment type	Statistical catch at age
Input data	DCF commercial data (landings and discards) and scientific survey (MEDITS) data
Discards, BMS landings*, and bycatch	Discards included
Indicators	
Other information	
Working group	STECF EWG 26-09

*BMS (Below Minimum Size) landings

Source: Own elaborations.

History of the catch and landings

Table 3.5.5. Red mullet in GSA 6: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes.

year	Bottom otter trawl GSA 6 ESP	Trammel nets GSA 6 ESP	Gillnets GSA 6 ESP	Other GSA 6 ESP
2002	303	2	0	0
2003	1381	19	0	0
2004	907	13	0	0
2005	977	18	0	0
2006	1371	16	0	0
2007	1171	12	0	0
2008	855	17	0	0
2009	509	12	0	0
2010	503	11	0	0
2011	929	137	3	1
2012	1015	76	1	1
2013	1161	99	3	2
2014	1189	122	1	0
2015	1438	130	3	1
2016	1611	92	1	1
2017	1353	110	1	1
2018	1245	80	0	0
2019	1390	112	2	1
2020	1355	89	10	2
2021	991	72	4	1
2022	1193	128	7	4
2023	1008	101	6	3
2024	1197	104	7	5
2025	1063	134	11	4

Source: MS data submission under the 2026 Mediterranean and Black Sea data call - MARE/D1/CO (2026).

Partial Fishing Mortality by fleet and GSA

Table 3.5.6. Red mullet in GSA 6: Partial Fishing Mortality by country, gear and GSA (average over 3 most recent years).

age	OTB	GNS	GTR
0	0.005	0.000	0.000
1	0.434	0.001	0.021
2	1.131	0.011	0.168
3	0.949	0.013	0.180
4	0.027	0.000	0.002

Source: Own elaborations.

3.6 Summary sheet for Red mullet in GSA 7

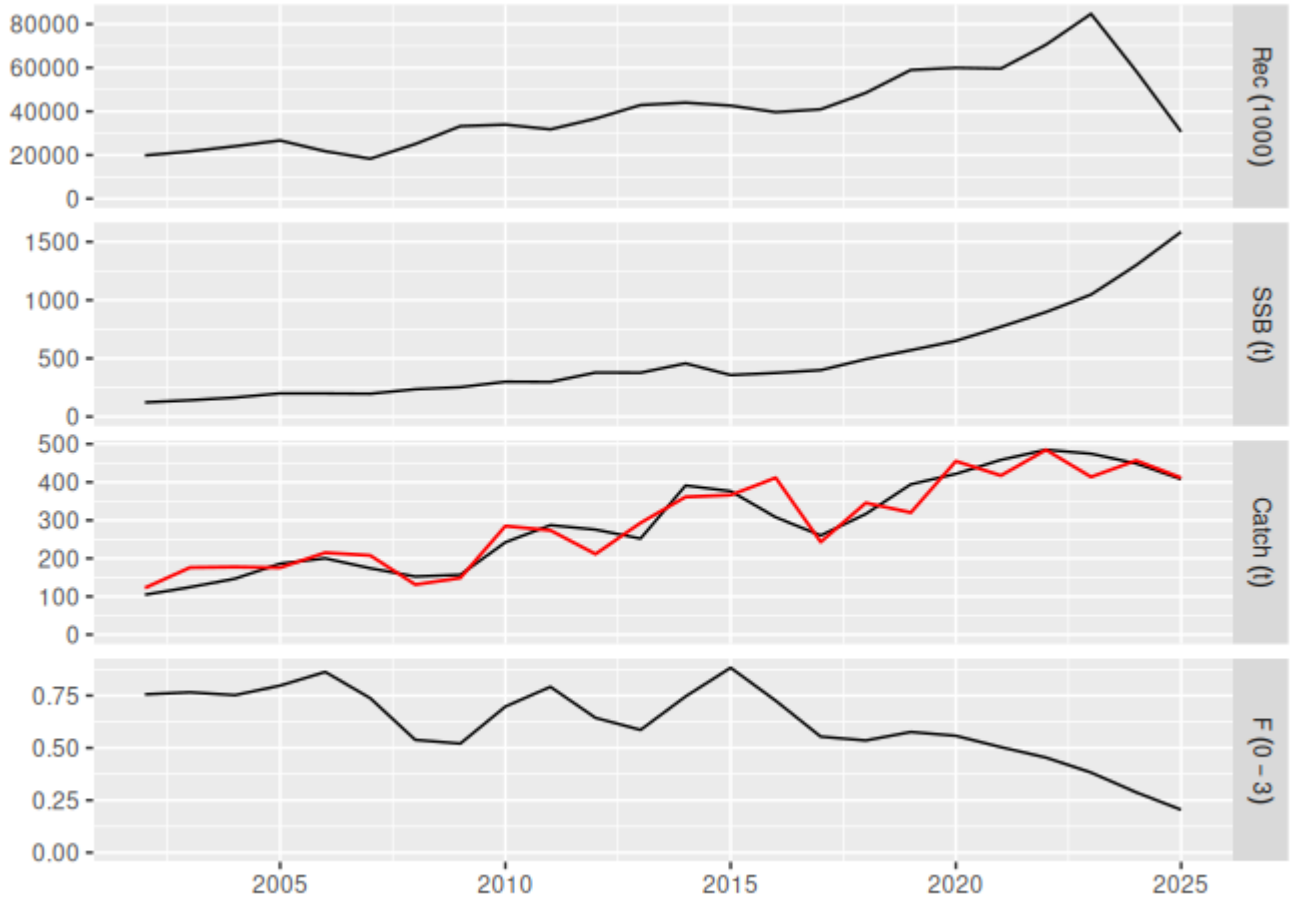
STECF advice on stock status

This assessment is an update of the previous year assessment, including a minor update on the fishing mortality model. As last year, MUT7 recruitment dynamics remains poorly understood, leading to poor model predictive capacity (MASE > 1), which makes it difficult to propose reasonable reference points and short-term forecast. Hence, STECF provides no advice for MUT7, and all information reported below should not be considered robust enough to inform management.

Stock development over time

Catches have increased almost continuously over the series, from about 122 t in 2002 to about 471 t in 2025. SSB has followed the same pattern and is at its highest estimated level in 2025 (1586 t), about ten times the level of the early 2000s. Fishing mortality has declined steadily throughout, from 0.87 in 2002 to 0.204 in 2025, so the rise in catch reflects a growing stock rather than growing fishing pressure. Recruitment rose to a maximum in 2023 and falls sharply in the last two years, but the terminal recruitment estimates are the least well determined of the series and should not be read as a trend.

Figure 3.6.1. Red mullet in GSA 7: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (black lines). The red line represents the reported catches time series.



Source: Own elaborations.

Table 3.6.1. Red mullet in GSA 7: Assessment summary. Weights are in tonnes. Catches estimated by the model.

Year	Recruitment (1000s)	SSB (t)	Catch (t)	F(0-3)
2002	19851	123	105	0.76
2003	21658	141	125	0.77
2004	24050	164	147	0.75
2005	26676	200	186	0.80
2006	21736	199	200	0.86
2007	18321	197	174	0.74
2008	25058	236	152	0.54
2009	33233	253	157	0.52
2010	33944	300	242	0.70
2011	31777	298	287	0.79
2012	36707	379	275	0.64
2013	42897	377	252	0.59
2014	44004	457	391	0.75
2015	42638	357	376	0.88
2016	39661	376	308	0.73
2017	40949	399	260	0.55
2018	48488	493	317	0.54
2019	58994	570	394	0.58
2020	59962	651	422	0.56
2021	59603	771	458	0.50
2022	70548	898	485	0.45
2023	84678	1048	475	0.38
2024	58508	1299	449	0.29
2025	30664	1586	408	0.20

Source: Own elaborations.

Stock and exploitation status

No biomass reference points were estimated for this stock. While a FMSY reference point was reported by STECF EWG 25-09 using F0.1 proxy, STECF EWG 26-09 considers that recurrent issues of the assessment hinder the use of such proxy.

Catch scenarios

Short term forecast is not required for this stock.

Basis of the advice

Table 3.6.2. Red mullet in GSA 7: The basis of the advice.

Advice basis	Western Mediterranean multiannual plan
Management plan	An EU Western Mediterranean multiannual plan (MAP) has been agreed by the EU for this stock (EU, 2019).

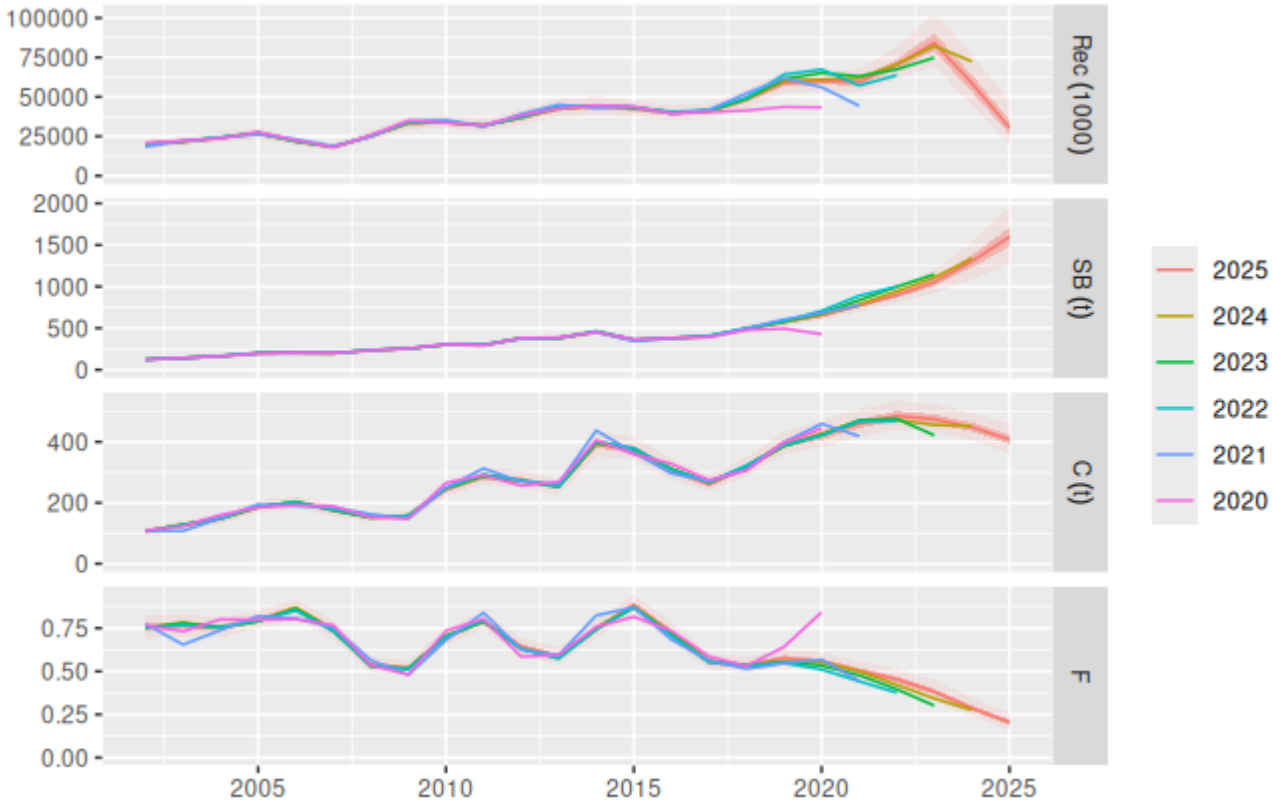
Source: Own elaborations.

Quality of the assessment

This assessment is an update of the EWG 25-09 assessment, with the model re-selected over a full factorial grid of 520 candidates. Settings that changed when compared to EWG 25_09 are (i) the survey observation variance is estimated freely at age instead of being forced constant across ages, and (ii) the number of knots in the fishing mortality model has been raised at 14.

The retrospective pattern is acceptable: Mohn's rho is -0.019 on SSB and -0.006 on Fbar. The one-year-ahead hindcast of the survey has a MASE of 1.85, i.e. the model predicts the index less well than a random walk, which is due to an ever increasing recruitment dynamics over the recent year. The reasons for the continued increase of this stock remain unknown, as noted by EWG 25-09. Until either the recruitment dynamics are better understood – for instance through an environmental covariate – or the stock stabilises around a new equilibrium for a few years, the reference points and any forecast must not be used for management.

Figure 3.6.2. Red mullet in GSA 7: retrospective analysis.



Source: Own elaborations.

Issues relevant for the advice

The unknown recruitment dynamics (see above).

Reference points

Table 3.6.3. Red mullet in GSA 7: Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY Btrigger		Not Defined	
MSY approach	FMSY		Not Defined	
Precautionary approach	Blim		Not Defined	
Precautionary approach	Bpa		Not Defined	
Precautionary approach	BMSY		Not Defined	

Source: Own elaborations.

Basis of the assessment

Table 3.6.4. Red mullet in GSA 7: Basis of the assessment and advice.

Assessment type	Statistical catch at age (a4a)
Input data	DCF commercial data (landings and discards) and scientific survey (MEDITS) data
Discards, BMS landings*, and bycatch	Discards included in the total catch
Indicators	
Other information	
Working group	STECF EWG 26-09

*BMS (Below Minimum Size) landings

Source: Own elaborations.

History of the catch and landings

Table 3.6.5. Red mullet in GSA 7: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes.

year	Bottom otter trawl GSA 7 ESP	Bottom otter trawl GSA 7 FRA	Trammel nets GSA 7 ESP	Multi-rig otter trawl GSA 7 FRA	Gillnets GSA 7 ESP	Gillnets GSA 7 FRA	Trammel nets GSA 7 FRA	Other GSA 7 FRA	Bottom otter trawl GSA 7 ITA	Longlines GSA 7 FRA
2002	11	0	0	0	0	0	0	0	0	0
2003	12	0	0	0	0	0	0	0	0	0
2004	26	0	0	0	0	0	0	0	0	0
2005	27	0	0	0	0	0	0	0	0	0
2006	31	0	0	0	0	0	0	0	0	0
2007	36	0	0	0	0	0	0	0	0	0
2008	21	0	0	0	0	0	0	0	0	0
2009	26	0	0	0	0	0	0	0	0	0
2010	28	252	0	4	0	0	0	0	0	0
2011	28	216	0	1	0	14	14	0	0	0
2012	29	149	0	0	0	15	18	0	0	0
2013	38	220	0	18	0	12	6	0	0	0
2014	41	280	0	25	0	7	8	0	0	0
2015	33	312	0	20	0	0	0	0	0	0
2016	44	255	0	92	0	11	9	1	0	0
2017	31	132	0	74	0	3	2	0	0	0
2018	24	182	0	120	0	14	6	0	0	0
2019	22	148	0	136	0	10	4	0	0	0
2020	11	191	0	215	0	12	12	1	0	0
2021	11	149	0	217	0	12	11	1	0	0
2022	2	166	0	246	0	24	20	1	0	0
2023	3	140	0	234	0	3	6	1	0	0
2024	3	150	0	263	0	7	10	0	0	0
2025	4	120	0	224	0	19	17	1	0	0

Source: MS data submission under the 2026 Mediterranean and Black Sea data call - MARE/D1/CO (2026).

Partial Fishing Mortality by fleet and GSA

Table 3.6.6. Red mullet in GSA 7: Partial Fishing Mortality by country, gear and GSA (average over 3 most recent years).

age	Bottom otter trawl GSA 7 FRA	Multi-rig otter trawl GSA 7 FRA	Gillnets and trammel nets GSA 7 FRA	Longlines GSA 7 FRA	Other GSA 7 FRA	Bottom otter trawl GSA 7 ESP	Total
0	0.0053	0.0088	0.0000	0.0000	0.0000	0.0001	0.0143
1	0.0691	0.1201	0.0029	0.0000	0.0001	0.0053	0.1976
2	0.1605	0.2775	0.0184	0.0001	0.0003	0.0277	0.4844
3	0.1489	0.2593	0.0242	0.0001	0.0003	0.0370	0.4698
4	0.0840	0.1480	0.0182	0.0001	0.0002	0.0248	0.2752

Source: Own elaborations.

3.7 Summary sheet for Norway lobster in GSA 5

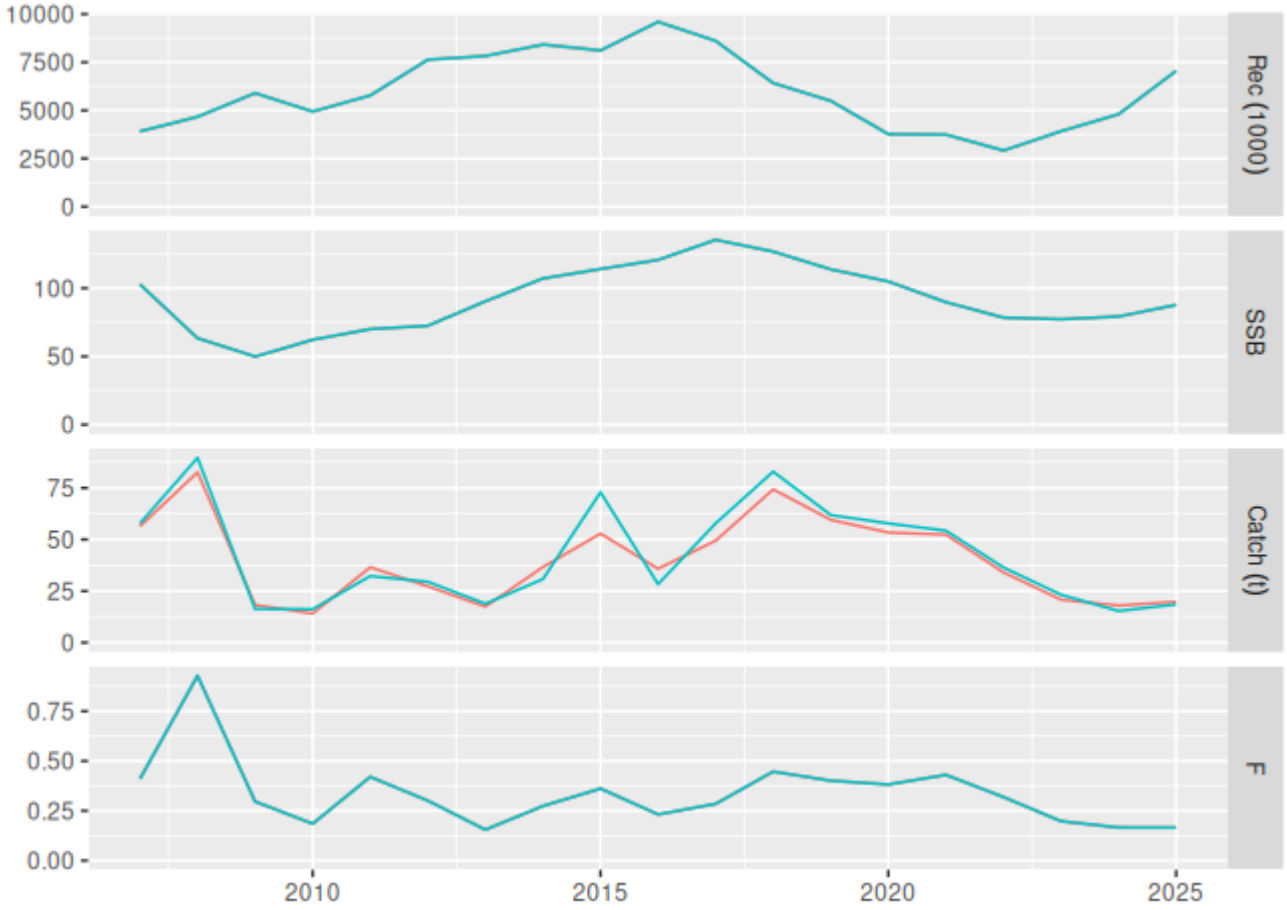
STECF advice on stock status

STECF EWG 26-09 advises that when MSY considerations are applied the fishing mortality in 2027 should be no more than 0.12. According to the status in 2025, the stock is overfished with biomass below precautionary limits.

Stock development over time

From 2017 to 2022 the stock has decreased, although since then it can be observed a slightly increasing trend. Catches in 2015 and 2018 have increased considerably relative to earlier years and since 2018 they are declining. The stock biomass and recruitment show a recovering trend since 2023.

Figure 3.7.1. Norway lobster in GSA 5: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (Blue lines). The red line represents the reported catches time series.



Source: Own elaborations.

Table 3.7.1. Norway lobster in GSA 5: Assessment summary. Weights are in tonnes. Catches estimated by the model.

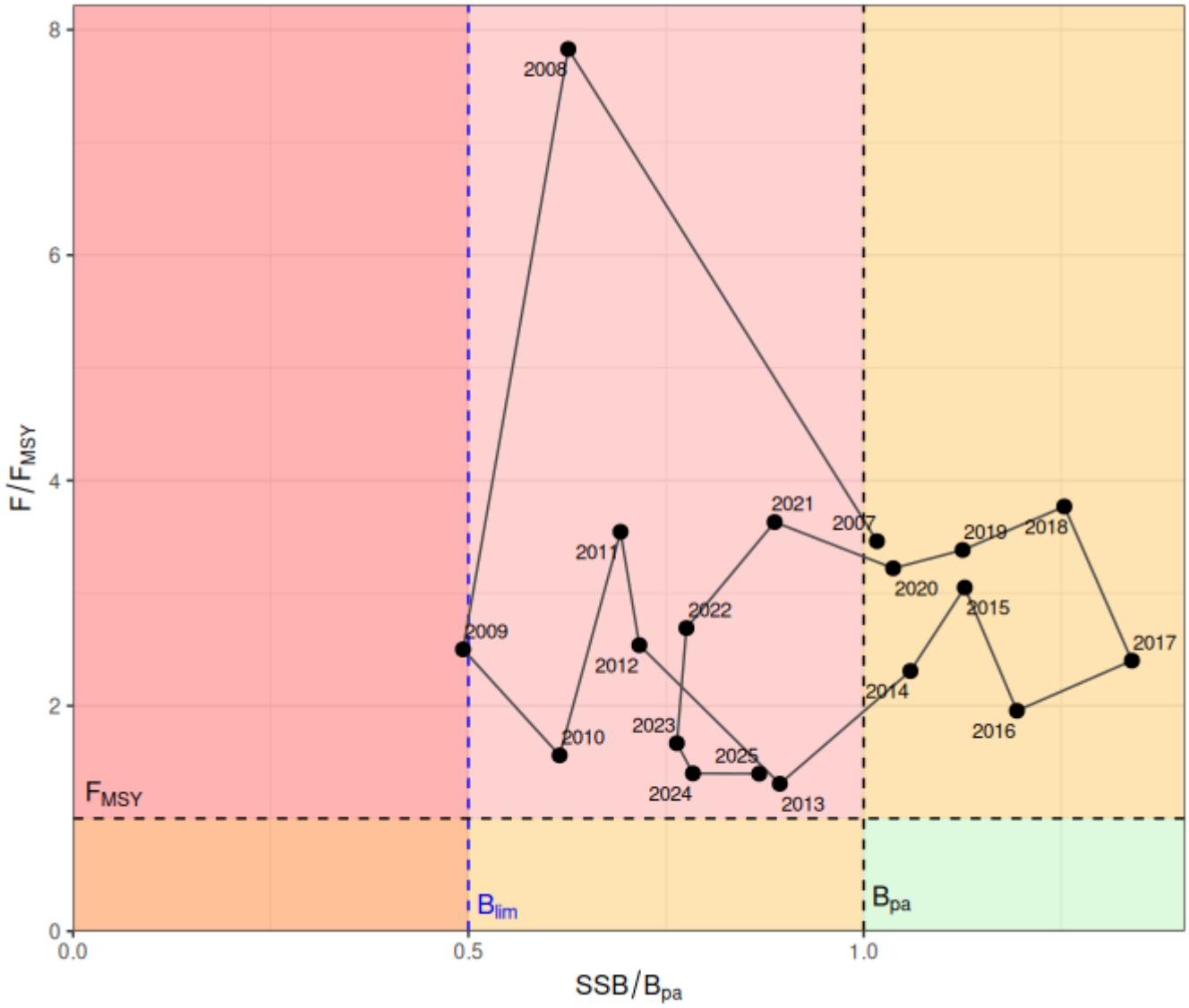
Year	Recruitment (1000s)	SSB (t)	Catch (t)	F(2-6)
2007	3911	103	56	0.41
2008	4668	63	83	0.93
2009	5897	50	18	0.30
2010	4942	62	14	0.18
2011	5777	70	37	0.42
2012	7634	72	27	0.30
2013	7825	90	17	0.16
2014	8419	107	37	0.27
2015	8114	114	53	0.36
2016	9598	121	36	0.23
2017	8610	135	49	0.28
2018	6418	127	74	0.45
2019	5496	114	60	0.40
2020	3770	105	53	0.38
2021	3742	90	52	0.43
2022	2918	78	34	0.32
2023	3920	77	21	0.20
2024	4802	79	18	0.17
2025	7054	88	20	0.17

Source: Own elaborations.

Stock and exploitation status

The stock status in 2025 relative to the reference points is: F > FMSY, SSB > Blim, and SSB < Bpa.

Figure 3.7.2. Norway lobster in GSA 5: Kobe plot showing the stock trajectory relative to biological reference points (F/FMSY and SSB/Bpa). The blue dashed line indicates SSB/Blim. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below Blim, representing a risk of impaired recruitment.



Source: Own elaborations.

Catch scenarios

No short term forecast needed for this stock.

Basis of the advice

Table 3.7.2. Norway lobster in GSA 5: The basis of the advice.

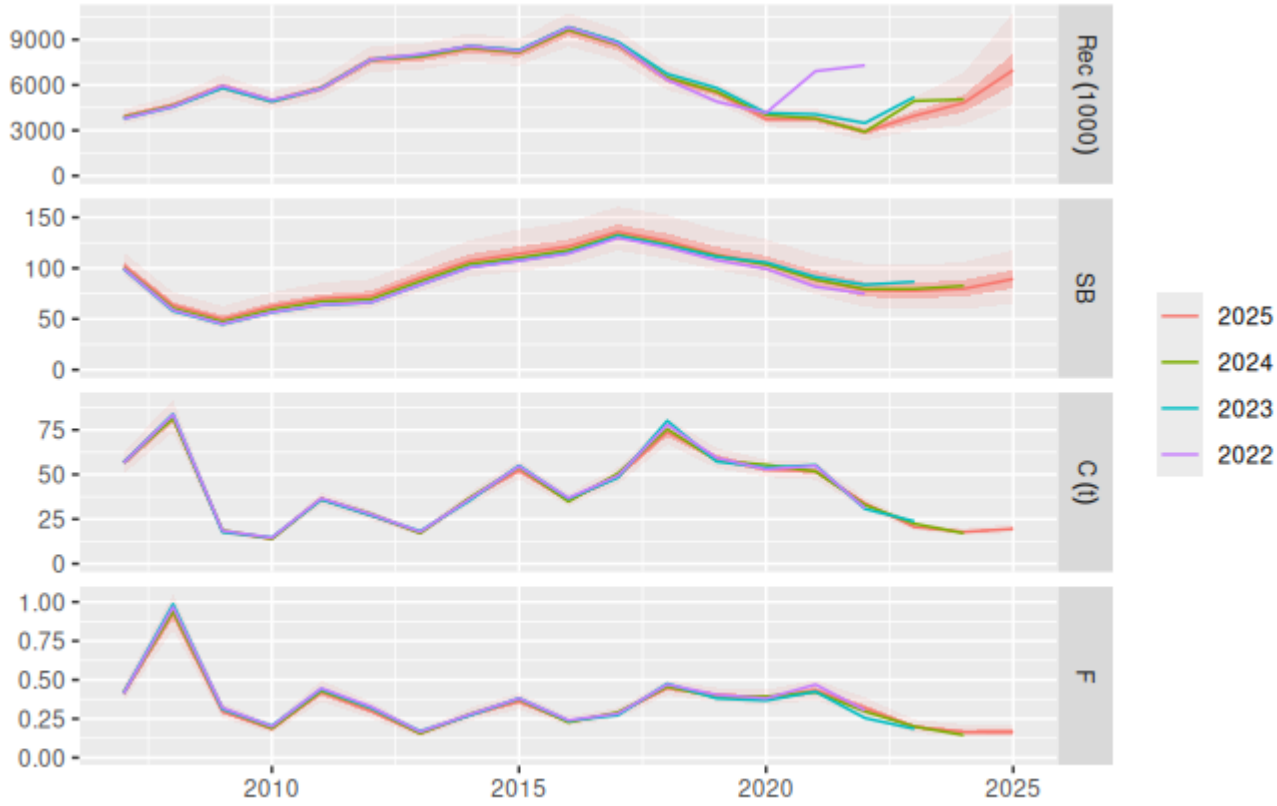
Advice basis	Western Mediterranean multiannual plan
Management plan	An EU Western Mediterranean multiannual plan (MAP) has been agreed by the EU for this stock (EU, 2019).

Source: Own elaborations.

Quality of the assessment

This is considered the first analytical assessment for this stock. Last year it was classified as category 3, as no model configuration yielded acceptable retrospective patterns. The new assessment is based on a separable model, a choice made necessary by the sparse information at the end of the time series. All diagnostics were considered acceptable. Nevertheless, as this is the first analytical assessment, the results should be interpreted with caution.

Figure 3.7.3. Norway lobster in GSA 5: retrospective analysis.



Source: Own elaborations.

Issues relevant for the advice

Changed to a quantitative assessment model as outlined above.

Reference points

Table 3.7.3. Norway lobster in GSA 5: Reference points, values, and their technical basis, they were estimated in EWG 26-09 as a quantitative assessment model had been approved for this stock.

Framework	Reference point	Value	Technical basis	Source
MSY approach	FMSY	0.12	F0.1 as proxy for FMSY	STECF EWG 26-09
Precautionary approach	Blim	51	Default based on 25% BF0.1	STECF EWG 26-09
Precautionary approach	Bpa	101	Blim * 2	STECF EWG 26-09
Precautionary approach	BMSY	202	BF0.1	STECF EWG 26-09
Precautionary approach	Fpa		Not Defined	

Source: Own elaborations.

Basis of the assessment

Table 3.7.4. Norway lobster in GSA 5: Basis of the assessment and advice.

Assessment type	Statistical catch at age
Input data	DCF commercial data (landings and discards) and scientific survey (MEDITS) data
Discards, BMS landings*, and bycatch	Discards included; considered as negligible
Indicators	
Other information	
Working group	STECF EWG 25-09

*BMS (Below Minimum Size) landings

Source: Own elaborations.

History of the catch and landings

Table 3.7.5. Norway lobster in GSA 5: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes.

year	Bottom otter trawl GSA 5 ESP	Multi-rig otter trawl GSA 5 FRA	Bottom otter trawl GSA 5 FRA	Bottom otter trawl GSA 5 ITA	Longlines GSA 5 ESP	Trammel nets GSA 5 ESP	Gillnets GSA 5 ESP
2002	17	0	0	0	0	0	0
2003	18	0	0	0	0	0	0
2004	25	0	0	0	0	0	0
2005	20	0	0	0	0	0	0
2006	21	0	0	0	0	0	0
2007	58	0	0	0	0	0	0
2008	90	0	0	0	0	0	0
2009	16	0	0	0	0	0	0
2010	16	0	0	0	0	0	0
2011	32	0	0	0	0	0	0
2012	32	0	0	0	0	0	0
2013	19	0	0	0	0	0	0
2014	31	0	0	0	0	0	0
2015	74	0	0	0	0	0	0

year	Bottom otter trawl GSA 5 ESP	Multi-rig otter trawl GSA 5 FRA	Bottom otter trawl GSA 5 FRA	Bottom otter trawl GSA 5 ITA	Longlines GSA 5 ESP	Trammel nets GSA 5 ESP	Gillnets GSA 5 ESP
2016	28	2	0	0	0	0	0
2017	58	0	0	0	0	0	0
2018	83	0	0	0	0	0	0
2019	62	0	0	0	0	0	0
2020	58	0	0	0	0	0	0
2021	55	0	0	0	0	0	0
2022	36	0	0	0	0	0	0
2023	23	0	0	0	0	0	0
2024	15	0	0	0	0	0	0
2025	19	0	0	0	0	0	0

Source: MS data submission under the 2026 Mediterranean and Black Sea data call - MARE/D1/CO (2026).

Partial Fishing Mortality by fleet and GSA

No partial fishing mortality needed for this stock.

3.8 Summary sheet for Norway lobster in GSA 6

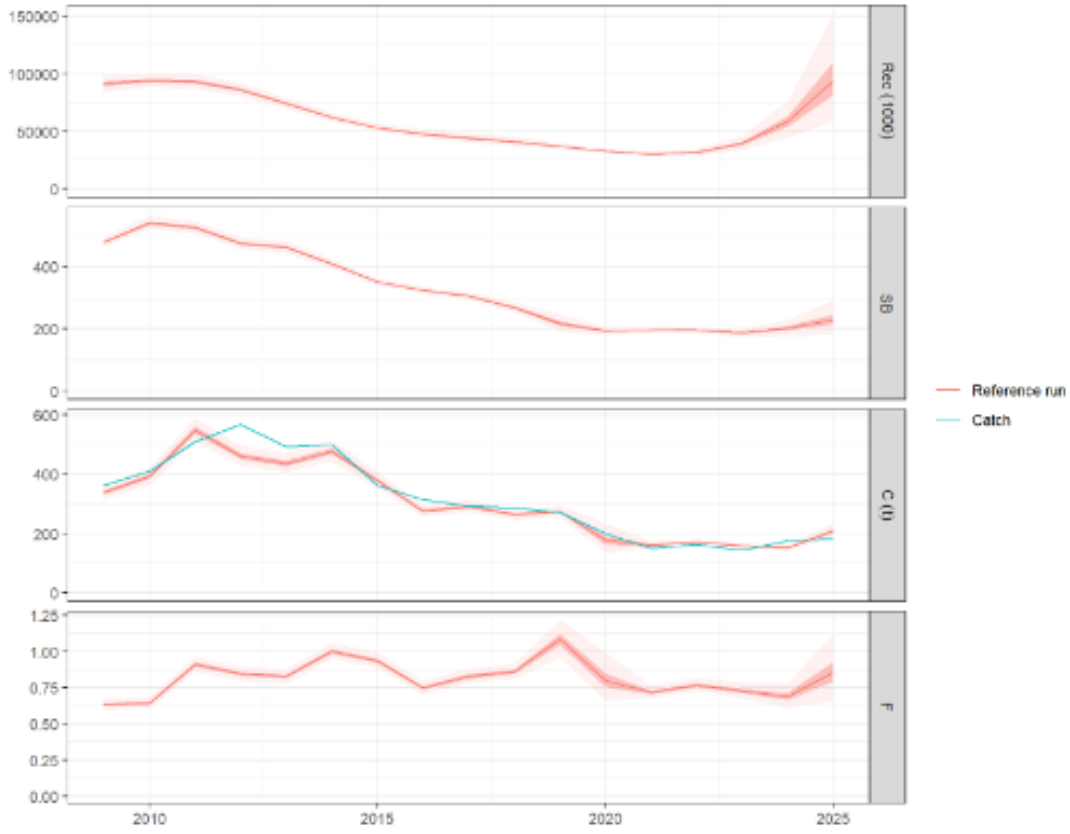
STECF advice on stock status

STECF EWG 26-09 advises that when MSY considerations are applied the fishing mortality in 2027 should be no more than 0.29. According to the status in 2025, the stock is overfished with biomass below precautionary limits.

Stock development over time

Catches of Norway lobster show a decreasing trend from 2011 to 2021 and then maintain the same tendency until 2023. For the last two years the catches present a slight increase until reaching an amount of 182 tonnes for the year 2025. SSB and Recruitment decreased until 2019 and then maintain stable during the last years with a slight increase in recruitment compared with the last year. Fbar (3-6) shows fluctuation with a sharp reduction in 2020 followed by a stabilization period (a plateau) until 2024. The actual value is about 0.86 at a level nearly three times the reference point Fmax.

Figure 3.8.1. Norway lobster in GSA 6: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (red lines). The blue line represents the reported catches time series.



Source: Own elaborations.

Table 3.8.1. Norway lobster in GSA 6: Assessment summary. Weights are in tonnes. Catches estimated by the model.

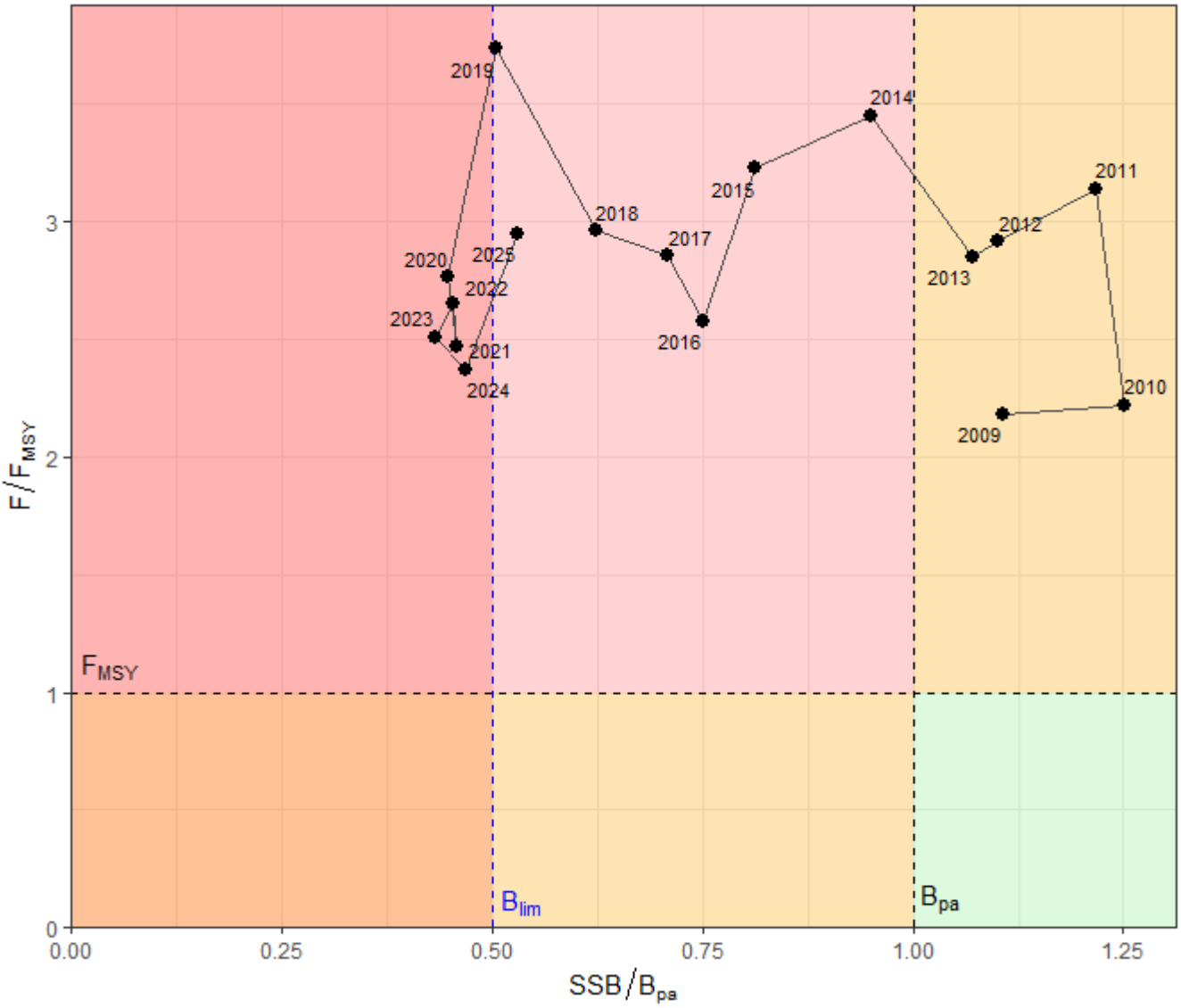
Year	Recruitment (1000s)	SSB (t)	Catch (t)	F(3-6)
2009	91159	479	338	0.63
2010	94128	541	393	0.64
2011	93270	527	548	0.91
2012	86083	477	461	0.85
2013	74288	463	436	0.83
2014	62290	411	478	1.00
2015	53271	352	380	0.94
2016	47731	325	276	0.75
2017	44323	307	292	0.83
2018	41119	270	264	0.86
2019	37034	219	275	1.08
2020	32781	194	178	0.80
2021	30295	199	163	0.72
2022	31704	197	172	0.77
2023	39633	188	159	0.73
2024	58491	203	152	0.69
2025	94711	230	210	0.86

Source: Own elaborations.

Stock and exploitation status

The stock status in 2025 relative to the reference points is: F > FMSY, SSB > Blim, and SSB < Bpa.

Figure 3.8.2. Norway lobster in GSA 6: Kobe plot showing the stock trajectory relative to biological reference points (F/FMSY and SSB/Bpa). The blue dashed line indicates SSB/Blim. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below Blim, representing a risk of impaired recruitment.



Source: Own elaborations.

Catch scenarios

No short term forecast needed for this stock.

Basis of the advice

Table 3.8.2. Norway lobster in GSA 6: The basis of the advice.

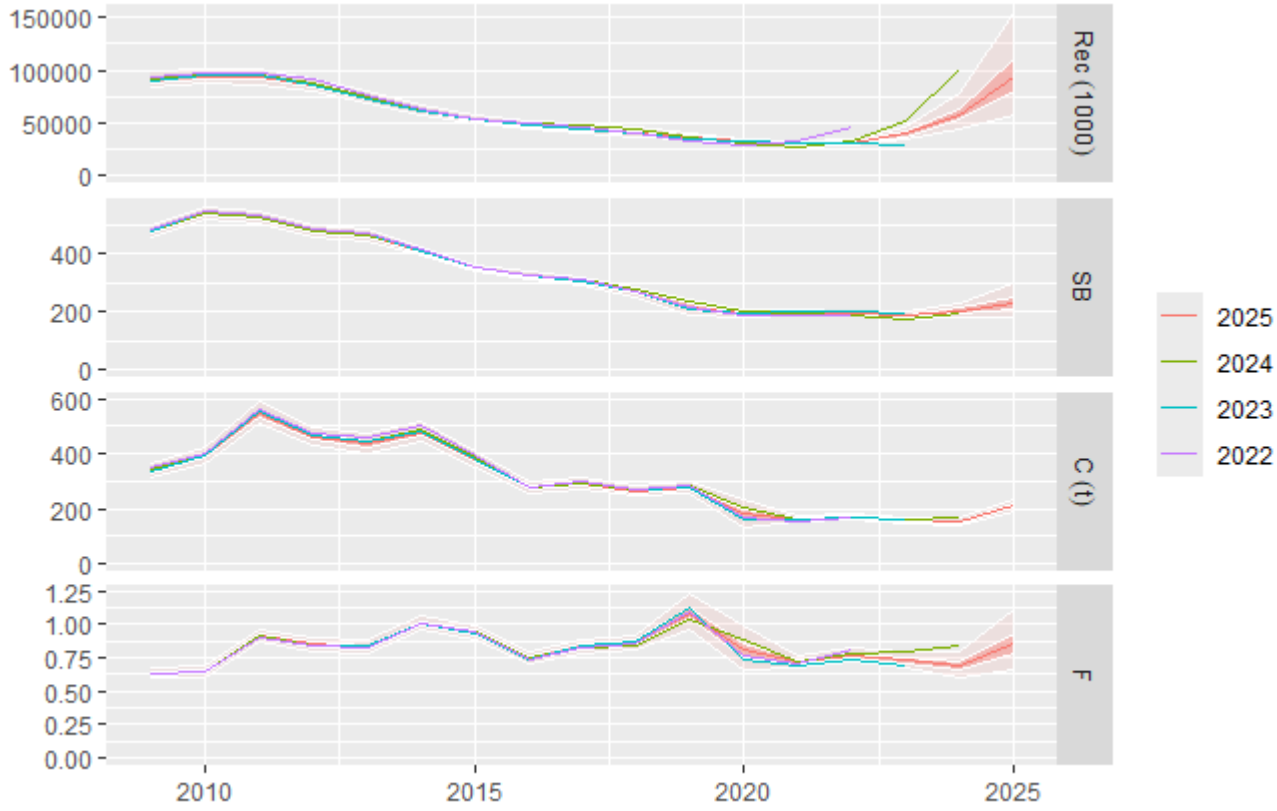
Advice basis	Western Mediterranean multiannual plan
Management plan	An EU Western Mediterranean multiannual plan (MAP) has been agreed by the EU for this stock (EU, 2019).

Source: Own elaborations.

Quality of the assessment

The same assessment model as the last year was performed for this year with a minor change in the number of knots in the S-R sub model (enhancement of knots from 4 to 7). The MEDITS survey index was not considered for the year 2020 as it was decided for the previous years of assessment. It is to highlight that multiple scenarios were explored to improve the quality of the assessment. Among these, the chosen scenario provided the best consistency in retrospective analysis. All other diagnostics were also considered acceptable.

Figure 3.8.3. Norway lobster in GSA 6: retrospective analysis.



Source: Own elaborations.

Issues relevant for the advice

No major issues were detected. All the issues of discards information were corrected.

Reference points

Table 3.8.3. Norway lobster in GSA 6: Reference points, values, and their technical basis, they were re-estimated in EWG25-09.

Framework	Reference point	Value	Technical basis	Source
MSY approach	FMSY	0.29	Fmax as proxy for FMSY	STECF EWG 25-09
Precautionary approach	Blim	217	Default based on 25% BF_{max}	STECF EWG 25-09
Precautionary approach	Bpa	433	Blim * 2	STECF EWG 25-09
Precautionary approach	BMSY	867	BF_{max}	STECF EWG 25-09
Precautionary approach	Fpa		Not Defined	

Source: Own elaborations.

Basis of the assessment

Table 3.8.4. Norway lobster in GSA 6: Basis of the assessment and advice.

Table 3.8.4. Norway lobster in GSA 6: Basis of the assessment and advice.

Assessment type	Statistical catch at age
Input data	DCF commercial data (landings and discards) and scientific survey (MEDITS) data
Discards, BMS landings*, and bycatch	Discards included
Indicators	
Other information	
Working group	STECF EWG 26-09

*BMS (Below Minimum Size) landings

Source: Own elaborations.

History of the catch and landings

Table 3.8.5. Norway lobster in GSA 6: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes.

year	Bottom otter trawl GSA 6 ESP	Gillnets GSA 6 ESP	Other GSA 6 ESP	Trammel nets GSA 6 ESP	Longlines GSA 6 ESP
2002	188	0	0	0	0
2003	382	0	0	0	0
2004	322	0	0	0	0
2005	352	0	0	0	0
2006	390	0	0	0	0
2007	409	0	0	0	0
2008	394	0	0	0	0
2009	356	0	0	0	0
2010	407	0	0	0	0
2011	508	0	0	0	0
2012	532	0	0	0	0
2013	491	0	0	0	0
2014	501	0	0	0	0
2015	362	0	0	0	0
2016	314	0	0	0	0
2017	293	0	0	0	0
2018	287	0	0	0	0
2019	270	0	0	0	0
2020	200	0	0	0	0
2021	149	0	0	0	0
2022	164	0	0	0	0
2023	143	0	0	0	0
2024	176	0	0	0	0
2025	182	0	0	0	0

Source: MS data submission under the 2026 Mediterranean and Black Sea data call - MARE/D1/CO (2026).

Partial Fishing Mortality by fleet and GSA

No Partial Fishing Mortality is needed for this species.

3.9 Summary sheet for European hake in GSAs 8, 9, 10, 11

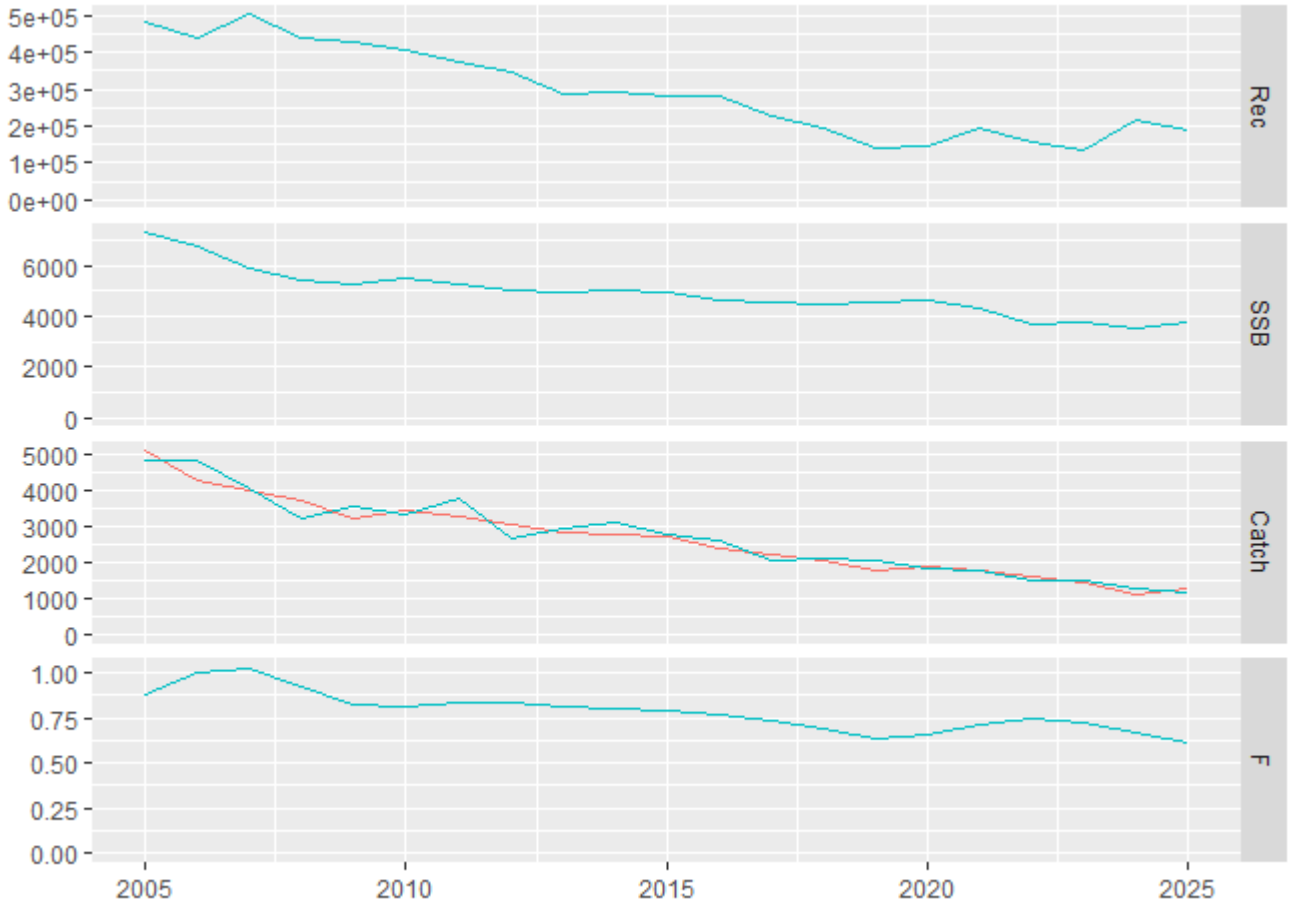
STECF advice on stock status

STECF EWG 26-09 reports that the current level of fishing mortality is above the reference point Fmax, used as proxy of FMSY (0.47). SSB at the beginning of 2026 is above Blim and below Bpa (F > FMSY, SSB > Blim, and SSB < Bpa).

Stock development over time

Catches of European hake show a decline in the whole time series. SSB slightly declines, reaching the lowest value in 2024. The assessment shows a decreasing trend in the number of recruits with the minimum value reached in 2023 (137185 thousand) and a fluctuating pattern in the following two years. Fbar (1-3) shows a declining trend, with the lowest value of 0.62 reached in 2025.

Figure 3.9.1. European hake in GSAs 8, 9, 10, 11: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (Blue lines). The red line represents the reported catches time series.



Source: Own elaborations.

Table 3.9.1. European hake in GSAs 8, 9, 10, 11: Assessment summary. Weights are in tonnes. Catches estimated by the model. SSB estimated in the beginning of the year.

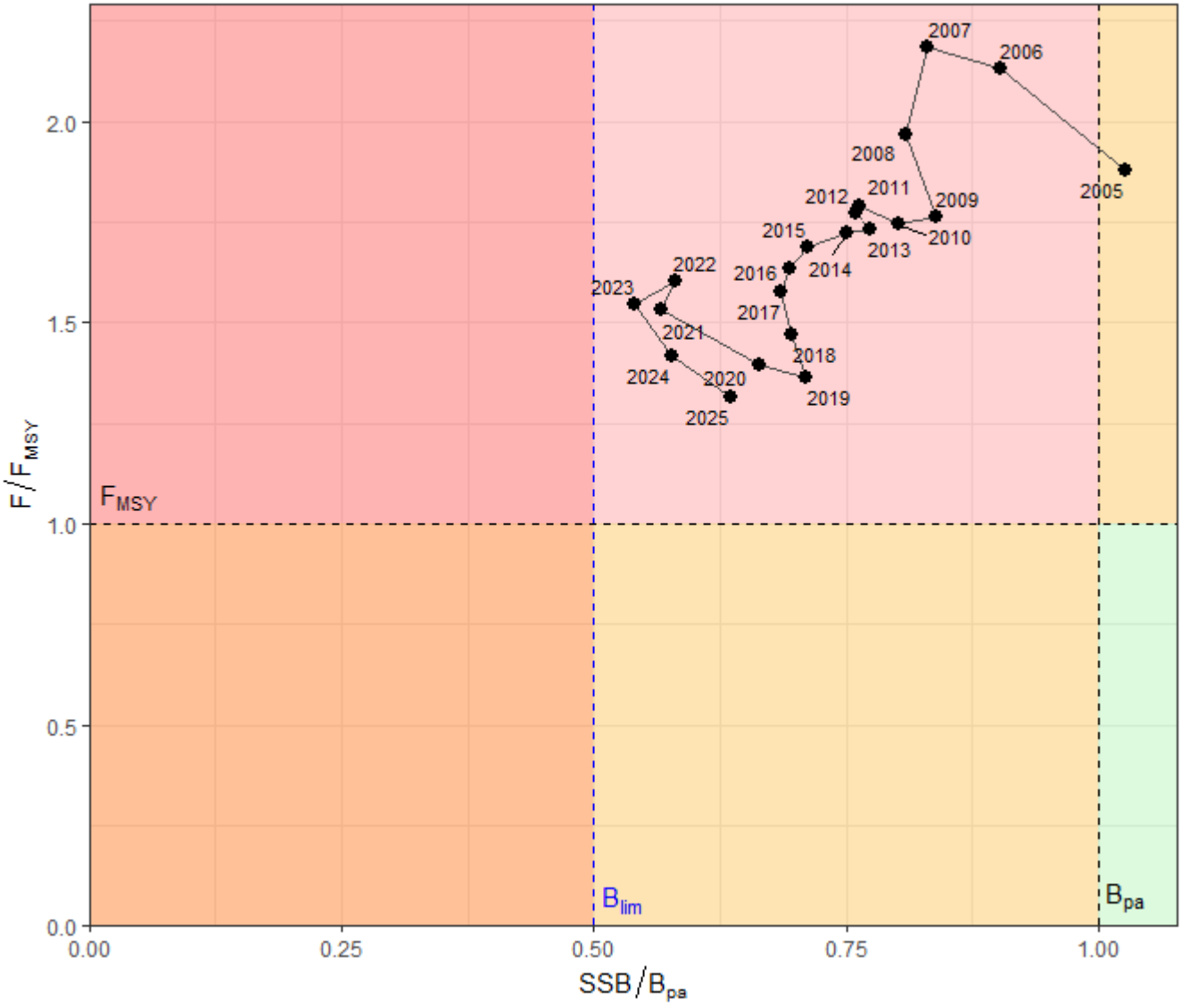
Year	Recruitment (1000s)	SSB (t)	Catch (t)	F(1-3)
2005	484573	7296	5123	0.88
2006	436540	6729	4301	1.00
2007	501856	5910	4007	1.02
2008	440106	5444	3719	0.92
2009	429387	5302	3236	0.83
2010	404605	5494	3480	0.82
2011	375684	5255	3286	0.84
2012	346052	5004	3058	0.83
2013	289429	4976	2867	0.81
2014	293415	5066	2821	0.81
2015	282710	4915	2766	0.79
2016	283125	4662	2430	0.77
2017	228738	4546	2273	0.74
2018	193392	4491	2060	0.69
2019	142494	4560	1830	0.64
2020	144811	4657	1887	0.65
2021	195562	4348	1776	0.72
2022	155383	3717	1632	0.75
2023	137160	3802	1457	0.72
2024	215354	3541	1163	0.66
2025	187994	3781	1316	0.62
2026		4161		

Source: Own elaborations.

Stock and exploitation status

The current level of fishing mortality (0.62) is above the reference point Fmax, used as proxy of FMSY (=0.47). SSB at the beginning of 2026 (4161) is above Blim (3277), but below Bpa (6544) (F > FMSY, SSB > Blim, and SSB < Bpa).

Figure 3.9.2. European hake in GSAs 8, 9, 10, 11: Kobe plot showing the stock trajectory relative to biological reference points (F/FMSY and SSB/Bpa). The blue dashed line indicates SSB/Blim. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below Blim, representing a risk of impaired recruitment. For this stock, the estimated SSB refers to SSB at the beginning of the following year.



Source: Own elaborations.

Catch scenarios

No short term forecast needed for this stock.

Basis of the advice

Table 3.9.2. European hake in GSAs 8, 9, 10, 11: The basis of the advice.

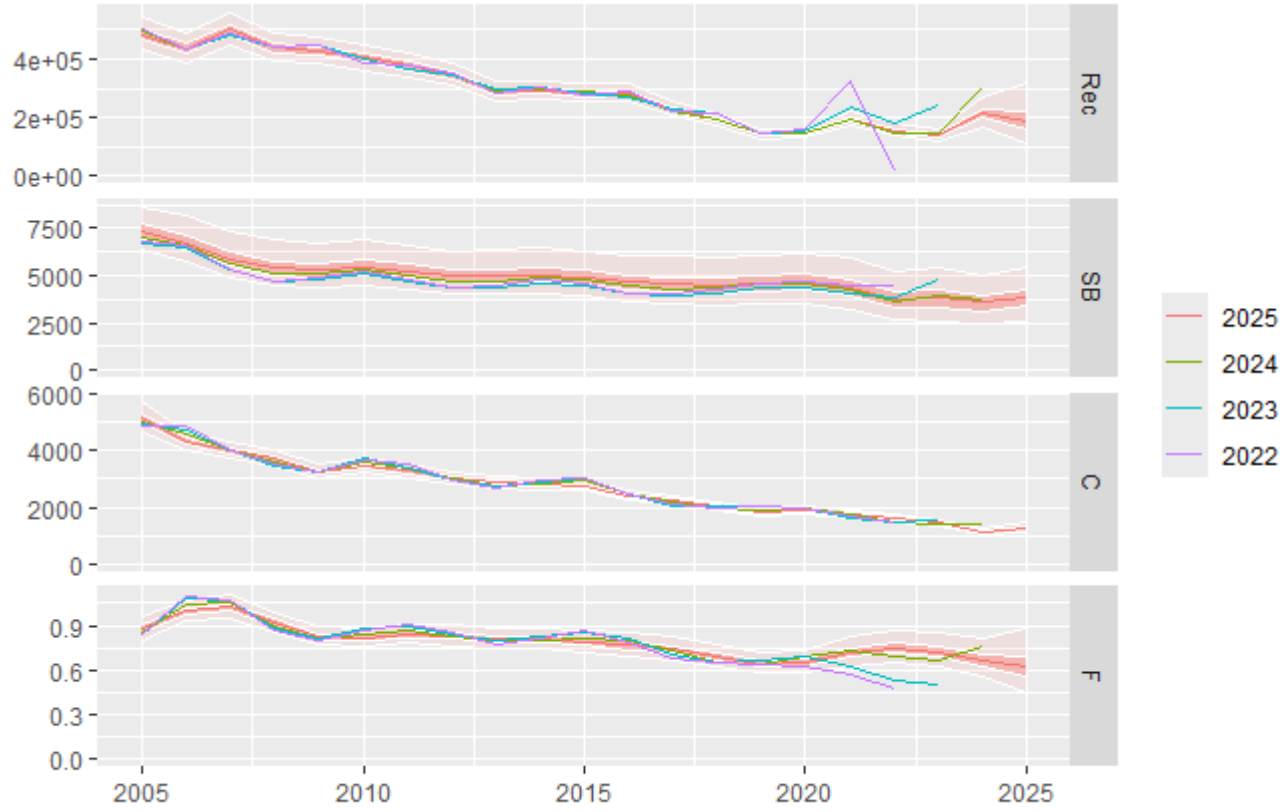
Advice basis	Western Mediterranean multiannual plan
Management plan	An EU Western Mediterranean multiannual plan (MAP) has been agreed by the EU for this stock (EU, 2019).

Source: Own elaborations.

Quality of the assessment

The assessment was carried out using a catch-at-age model (a4a). Both catches and survey indices showed good internal consistency. The assessment carried out during EWG 25-09 performed well in terms of diagnostics, although it showed some instability in the retrospective analysis. For this reason, the fishing mortality submodel was slightly modified to better fit the new data. All diagnostics of the new model were considered acceptable, and the retrospective analysis showed improved behaviour. Overall, the conclusion of F greater than FMSY over the time series is consistent.

Figure 3.9.3. European hake in GSAs 8, 9, 10, 11: retrospective analysis.



Source: Own elaborations.

Issues relevant for the advice

Changed assessment model as outlined above.

Reference points

Table 3.9.3. European hake in GSAs 8, 9, 10, 11: Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY Btrigger		Not Defined	
MSY approach	FMSY	0.47	Fmax as proxy for FMSY	STECF EWG 26-09
Precautionary approach	Blim	3277	Default based on 25% BFmax and GM recruitment	STECF EWG 26-09
Precautionary approach	Bpa	6554	Blim * 2	STECF EWG 26-09
Precautionary approach	BMSY	13108	BFmax	STECF EWG 26-09
Precautionary approach	Fpa		Not Defined	

Source: Own elaborations.

Basis of the assessment

Table 3.9.4. European hake in GSAs 8, 9, 10, 11: Basis of the assessment and advice.

Assessment type	Statistical catch at age
Input data	DCF commercial data (landings and discards) and scientific survey (MEDITS) data
Discards, BMS landings*, and bycatch	Discards included
Indicators	
Other information	
Working group	STECF EWG 26-09

*BMS (Below Minimum Size) landings

Source: Own elaborations.

History of the catch and landings

Table 3.9.5. European hake in GSAs 8, 9, 10, 11: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes.

year	GNS GSA 8 FRA	GTR GSA 8 FRA	LLS GSA 8 FRA	LLS GSA 8 ITA	OTB GSA 8 FRA	OTB GSA 8 ITA	OTB GSA 8 MLT	OTH GSA 8 FRA
2002	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0
2010	0	0	0	0	12	0	0	0
2011	0	174	0	0	17	0	0	0
2012	1	1	0	0	16	0	0	0
2013	0	0	0	0	2	0	0	0
2014	2	1	0	0	11	0	0	0
2015	0	4	0	0	8	0	0	0
2016	0	22	0	0	13	0	0	0
2017	0	0	0	0	13	0	0	0
2018	0	0	0	0	20	0	0	0
2019	0	0	0	0	16	114	0	0
2020	0	1	1	0	17	0	0	0
2021	0	1	0	0	17	0	0	0
2022	0	0	0	0	13	0	0	0
2023	0	0	1	0	12	0	0	0
2024	0	0	0	0	12	1	0	0
2025	0	0	0	0	9	1	0	0

year	OTH GSA 8 ITA	OTT GSA 8 FRA	GNS GSA 9 ITA	GTR GSA 9 ITA	LLS GSA 9 ESP	LLS GSA 9 ITA	LLS GSA 9 MLT	OTB GSA 9 ITA
2002	0	0	0	0	0	0	0	0
2003	0	0	0	821	0	0	0	1244
2004	0	0	250	346	0	0	0	553
2005	0	0	522	284	0	0	0	1054
2006	0	0	593	404	0	0	0	1285
2007	0	0	576	132	0	0	0	1025
2008	0	0	345	61	0	0	0	915
2009	0	0	401	54	0	0	0	1551
2010	0	0	576	57	0	0	0	951
2011	0	0	502	54	0	0	0	1323
2012	0	0	309	49	0	0	0	828
2013	0	0	199	98	0	0	0	1287
2014	0	0	178	77	0	0	0	1296
2015	0	0	158	35	0	0	0	1086
2016	0	0	83	37	0	0	0	967
2017	0	0	89	13	0	0	0	545
2018	0	0	151	19	0	0	0	549
2019	0	0	188	25	0	32	0	510
2020	0	0	131	25	0	35	0	415
2021	0	0	109	28	0	28	0	474
2022	0	0	61	11	0	22	0	536
2023	0	0	91	7	0	19	0	599
2024	0	0	42	10	0	18	0	414
2025	0	0	21	5	0	19	0	574

year	OTH GSA 9 ESP	OTH GSA 9 ITA	OTH GSA 9 MLT	GNS GSA 10 ITA	GTR GSA 10 ITA	LLS GSA 10 ITA	OTB GSA 10 ITA	OTH GSA 10 ITA
2002	0	0	0	0	225	0	515	272
2003	0	0	0	0	329	0	425	343
2004	0	0	0	177	202	266	486	207
2005	0	0	0	294	124	269	612	185
2006	0	0	0	323	152	288	786	22
2007	0	0	0	220	157	240	641	11
2008	0	0	0	311	68	234	501	9
2009	0	0	0	283	107	249	541	9
2010	0	0	0	431	202	220	543	2
2011	0	0	0	291	153	391	498	2
2012	0	0	0	318	138	229	537	4
2013	0	0	0	238	355	145	350	0
2014	0	0	0	486	159	278	363	2
2015	0	0	0	363	190	202	298	21
2016	0	0	0	275	208	246	343	9
2017	0	0	0	334	149	197	176	18
2018	0	0	0	223	110	96	191	0
2019	0	15	0	282	98	127	248	3
2020	0	6	0	314	83	231	194	1
2021	0	6	0	294	117	150	321	4
2022	0	6	0	160	38	73	327	5
2023	0	7	0	139	38	87	302	12
2024	0	7	0	143	42	95	344	12
2025	0	10	0	83	33	78	219	10

year	GNS GSA 11 ITA	GTR GSA 11 ITA	LLS GSA 11 ITA	OTB GSA 11 ITA	OTH GSA 11 ITA
2002	0	0	0	361	0
2003	0	0	0	897	0
2004	0	0	0	711	0
2005	0	0	0	1088	0
2006	0	0	0	824	0
2007	0	0	0	550	0
2008	0	0	0	339	0
2009	0	0	0	367	0
2010	0	0	0	341	0
2011	0	0	0	546	0
2012	0	0	0	280	0
2013	0	60	1	239	0
2014	1	120	4	148	0
2015	0	0	0	429	0
2016	4	60	1	377	0
2017	20	21	6	522	0
2018	30	5	1	524	0
2019	0	0	0	354	0
2020	0	0	0	267	0
2021	0	0	0	224	0
2022	8	10	3	233	0
2023	0	12	2	167	0
2024	1	15	4	126	0
2025	3	10	4	103	0

Source: MS data submission under the 2026 Mediterranean and Black Sea data call - MARE/D1/CO (2026).

Partial Fishing Mortality by fleet and GSA

Table 3.9.6. European hake in GSAs 8, 9, 10, 11: Partial Fishing Mortality by country, gear and GSA (average over 3 most recent years).

age	OTB GSA 9 ITA	GNS GSA 9 ITA	GTR GSA 9 ITA	OTB GSA 10 ITA
0	0.1896	0.0000	0.0000	0.0313
1	0.4581	0.0005	0.0004	0.4092
2	0.2062	0.0162	0.0119	0.0805
3	0.0719	0.0249	0.0165	0.0347
4	0.0489	0.0231	0.0158	0.0070
5	0.0386	0.0310	0.0192	0.0092
6	0.0223	0.0158	0.0113	0.0170
7+	0.0097	0.0060	0.0045	0.0000

age	GNS GSA 10 ITA	LLS GSA 10 ITA	GTR GSA 10 ITA	OTB GSA 11 ITA
0	0.0002	0.0000	0.0001	0.0012
1	0.0116	0.0008	0.0053	0.1121
2	0.1094	0.0287	0.0456	0.1076
3	0.1046	0.0457	0.0421	0.0587
4	0.0355	0.0367	0.0137	0.0291
5	0.0084	0.0315	0.0032	0.0161
6	0.0023	0.0407	0.0008	0.0149
7+	0.0000	0.0134	0.0000	0.0006

Source: Own elaborations.

3.10 Summary sheet for Deep water rose shrimp in GSAs 8, 9, 10, 11

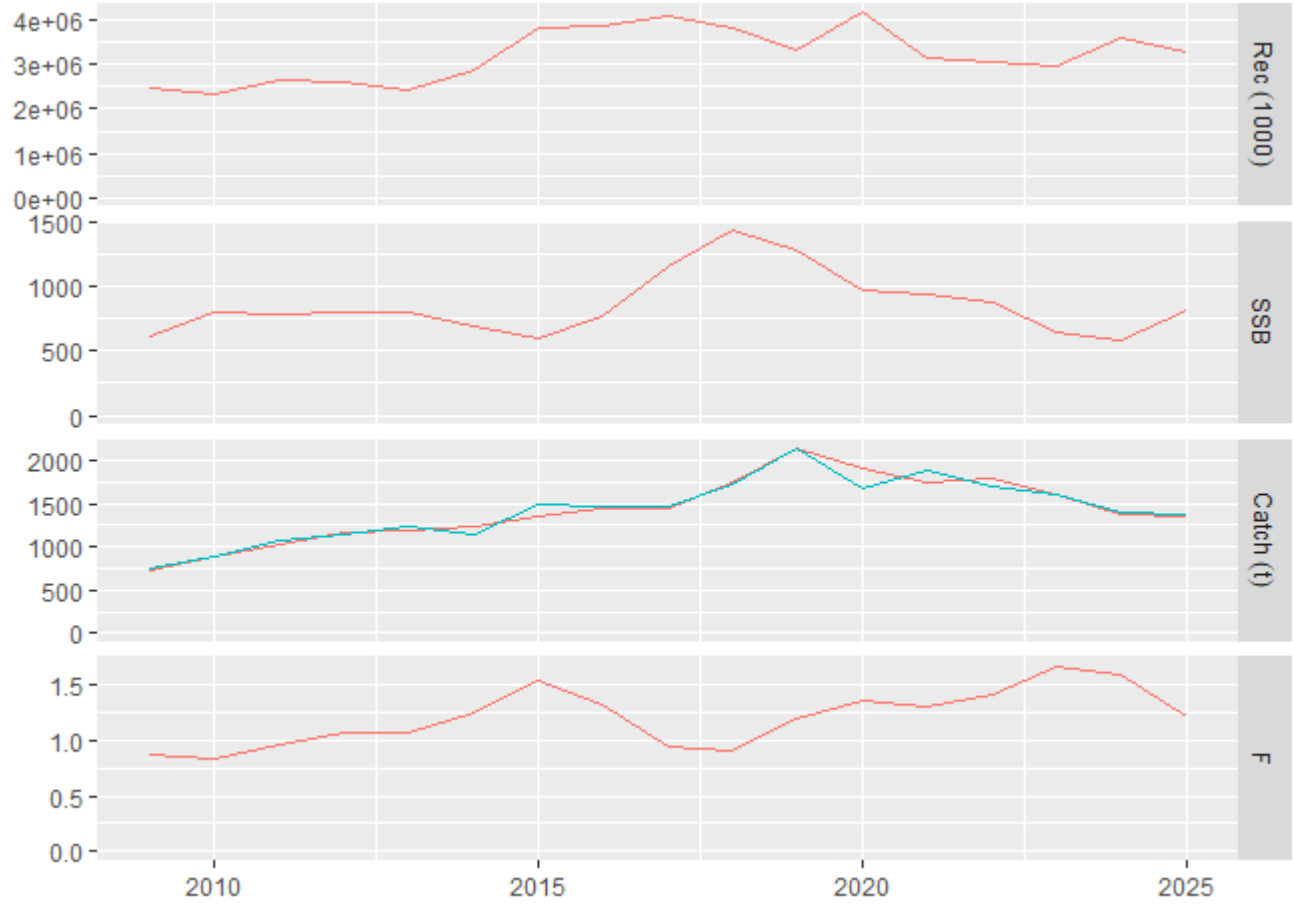
STECF advice on stock status

The current level of fishing mortality is slightly below $F_{0.1}$, used as a proxy for F_{MSY} ($F/F_{0.1}$ = 0.90). SSB in 2025 was above B_{lim}, B_{pa} and $B_{F0.1}$ ($F < F_{MSY}$, $SSB > B_{lim}$ and $SSB > B_{pa}$). The stock was therefore not subject to overfishing, and its reproductive capacity was above the limit and precautionary biomass reference points. The biological reference points were estimated from the updated assessed stock using a geometric mean stock recruitment relationship. $B_{F0.1}$ was estimated at 740 tonnes. B_{lim} was set at 25% of $B_{F0.1}$ (185 tonnes), and B_{pa} at twice B_{lim} (370 tonnes).

Stock development over time

Recruitment showed marked interannual variability over the assessment period. Following a decline in 2023, recruitment increased in 2024 and decreased slightly in 2025. SSB increased from 617 tonnes in 2009 to a maximum of 1431 tonnes in 2018. It subsequently declined to 584 tonnes in 2024 and increased to 813 tonnes in 2025. Catch increased from 733 tonnes in 2009 to a maximum of 2131 tonnes in 2019 and generally declined thereafter, reaching 1361 tonnes in 2025. F_{1-2} increased from 0.91 in 2018 to a maximum of 1.67 in 2023 and subsequently decreased to 1.60 in 2024 and 1.21 in 2025. Historical trends are shown in Figure 3.10.1 and the corresponding annual estimates are reported in Table 3.10.1.

Figure 3.10.1. Deep water rose shrimp in GSAs 8, 9, 10, 11: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (red lines). The blue line represents the reported catches time series.



Source: Own elaborations.

Table 3.10.1. Deep water rose shrimp in GSAs 8, 9, 10, 11: Assessment summary. Weights are in tonnes. Catches estimated by the model.

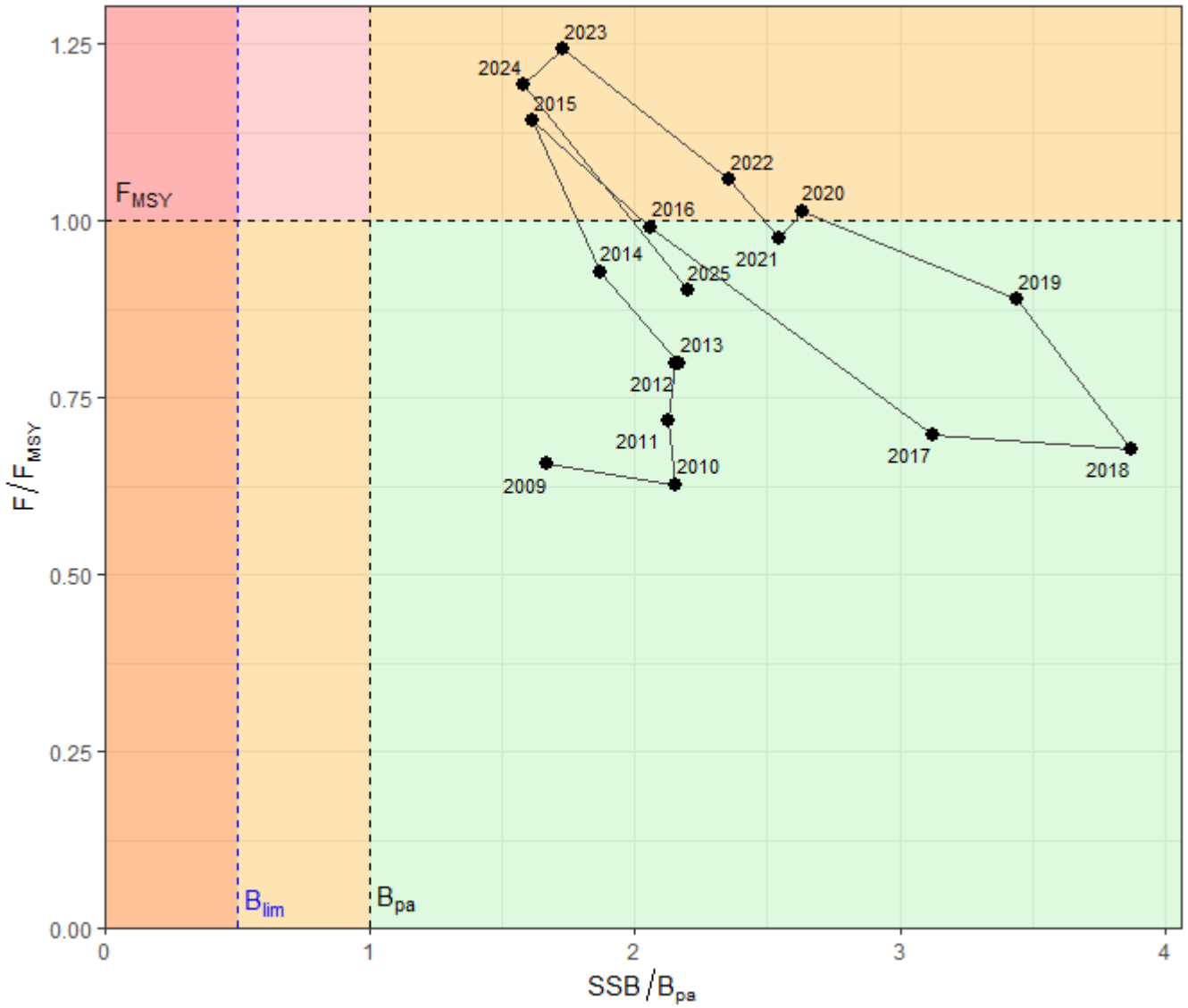
Year	Recruitment (1000s)	SSB (t)	Catch (t)	F(1-2)
2009	2456765	617	733	0.88
2010	2331122	796	892	0.84
2011	2665159	785	1033	0.96
2012	2604650	795	1176	1.07
2013	2445134	802	1184	1.07
2014	2886986	691	1224	1.25
2015	3836309	597	1351	1.53
2016	3866889	762	1437	1.33
2017	4110891	1155	1451	0.94
2018	3814490	1431	1740	0.91
2019	3331271	1273	2131	1.19
2020	4168270	972	1893	1.36
2021	3141760	941	1736	1.31
2022	3049129	871	1785	1.42
2023	2972575	640	1598	1.67
2024	3601894	584	1381	1.60
2025	3278223	813	1361	1.21

Source: Own elaborations.

Stock and exploitation status

In 2025, F_{bar} for ages 1 to 2 was 1.21, slightly below $F_{0.1}$, which was estimated at 1.34 and used as a proxy for F_{MSY}. Fishing mortality declined from 1.67 in 2023 to 1.60 in 2024 and 1.21 in 2025. Consequently, the F to $F_{0.1}$ ratio decreased from 1.24 in 2023 and 1.19 in 2024 to 0.90 in 2025. SSB decreased from 640 tonnes in 2023 to 584 tonnes in 2024 and subsequently increased to 813 tonnes in 2025. In 2025, SSB was above B_{lim}, B_{pa} and $B_{F0.1}$, with an SSB to $BF_{0.1}$ ratio of 1.10. The stock was not subject to overfishing in 2025 and SSB was above all biomass reference points considered. The stock trajectory relative to F_{MSY}, B_{pa} and B_{lim} is shown in Figure 3.10.2.

Figure 3.10.2. Deep water rose shrimp in GSAs 8, 9, 10, 11: Kobe plot showing the stock trajectory relative to biological reference points (F/F_{MSY} and SSB/B_{pa}). The blue dashed line indicates SSB/B_{lim}. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below B_{lim}, representing a risk of impaired recruitment.



Source: Own elaborations.

Basis of the advice

The basis of the advice is summarised in Table 3.10.2.

Table 3.10.2. Deep water rose shrimp in GSAs 8, 9, 10, 11: The basis of the advice.

Advice basis	Western Mediterranean multiannual plan
Management plan	An EU Western Mediterranean multiannual plan (MAP) has been agreed by the EU for this stock (EU, 2019).

Source: Own elaborations.

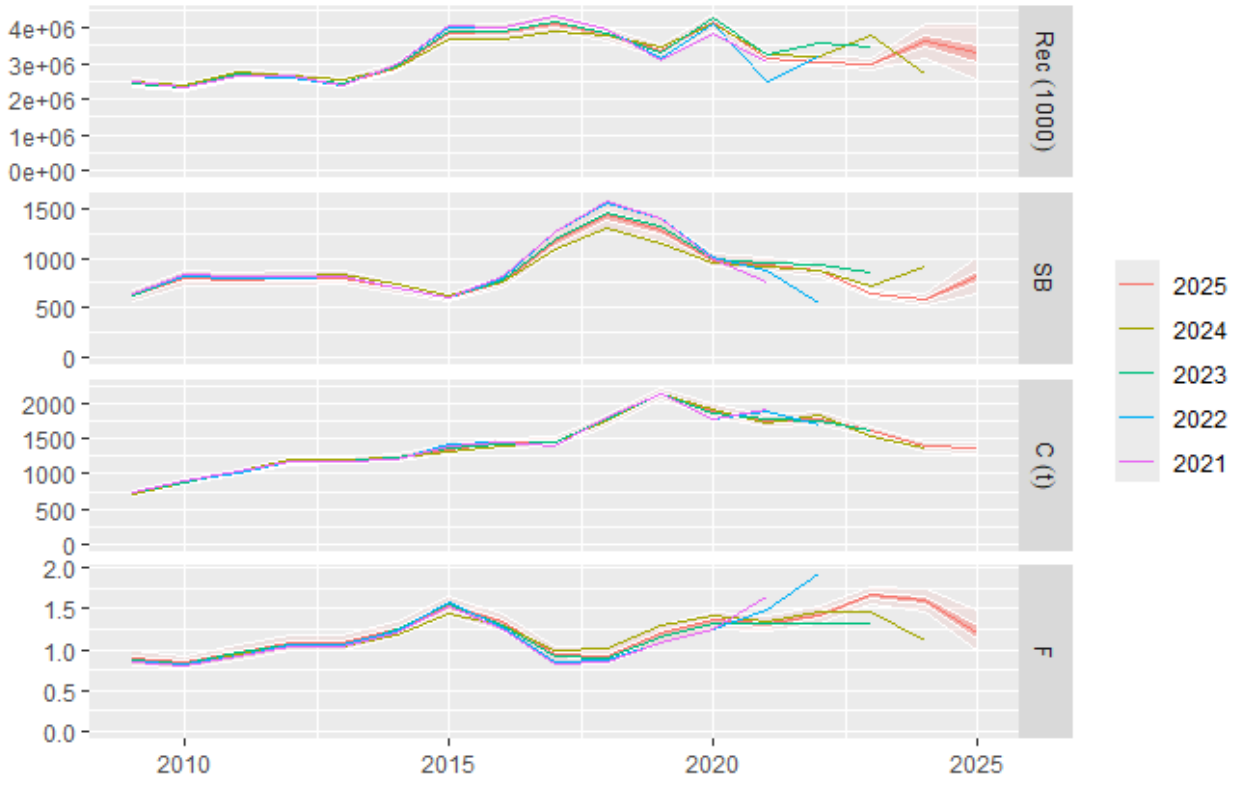
Quality of the assessment

The assessment was carried out for combined sexes using catch at age data for 2009 to 2025 and the MEDITS abundance index at age for the same period. MEDITS observations for 2022 were unavailable and were treated as missing without interpolation. The assessment covered ages 0 to 3, with age 3 defined as a plus group, and fishing mortality was averaged over ages 1 and 2.

A range of fishing mortality model configurations was evaluated. The analyses explored alternative degrees of smoothness for the year effect and tensor product formulations allowing interactions between age and year. The selected configuration retained an additive and separable age and year structure. Ages 2 and older shared the same age effect, while interannual variation in fishing mortality was represented by a smooth year effect with k = 11. Survey catchability was modelled as an age factor. Recruitment was modelled using a geometric mean with CV = 0.2.

Relative to the configuration used by STECF EWG 25-09, the main change was the increase in the basis dimension of the year smoother in the fishing mortality model from k = 7 to k = 11. This provided greater flexibility to describe interannual changes in fishing mortality while retaining a parsimonious age structure. Model selection was based on the combined evaluation of convergence, parameter estimability, fit to catch and survey observations, residual patterns, information criteria and retrospective performance. The selected model showed no major systematic patterns in the residuals and provided an acceptable representation of the available catch and survey information. Retrospective diagnostics were considered acceptable and did not indicate substantial instability in the terminal estimates. The retrospective is presented in Figure 3.10.3.

Figure 3.10.3. Deep water rose shrimp in GSAs 8, 9, 10, 11: retrospective analysis.



Source: Own elaborations.

Issues relevant for the advice

No additional relevant issues for the advice.

Reference points

The biological reference points were estimated by STECF EWG 26-09 using a geometric mean recruitment model. $F_{0.1}$ was used as a proxy for F_{MSY}. $B_{F0.1}$ was defined as the equilibrium SSB corresponding to $F_{0.1}$. Blim was set at 25% of $B_{F0.1}$ and B_{pa} at twice B_{lim}. F_{pa} was defined as the equilibrium fishing mortality corresponding to B_{pa}. The resulting values and their technical basis are reported in Table 3.10.3.

Table 3.10.3. Deep water rose shrimp in GSAs 8, 9, 10, 11: Reference points, values and technical basis, re-estimated by STECF EWG 26-09.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$		Not defined	
MSY approach	F_{MSY}	1.34	$F_{0.1}$ as proxy for F_{MSY}	STECF EWG 26-09
Precautionary approach	B_{lim}	185	25% of $BF_{0.1}$; GM recruitment	STECF EWG 26-09
Precautionary approach	B_{pa}	370	2 x B_{lim}	STECF EWG 26-09
Precautionary approach	B_{MSY}	740	$BF_{0.1}$	STECF EWG 26-09
Precautionary approach	F_{pa}	2.64	Equilibrium F at B_{pa}	STECF EWG 26-09
Management plan	MSY $B_{trigger}$		Not defined	
Management plan	B_{lim}		Not defined	
Management plan	F_{MSY}	1.34	$F_{0.1}$ as proxy for F_{MSY}	STECF EWG 26-09

Source: Own elaborations.

Basis of the assessment

The data and model components used in the assessment are summarised in Table 3.10.4.

Table 3.10.4. Deep water rose shrimp in GSAs 8, 9, 10, 11: Basis of the assessment and advice.

Assessment type	Statistical catch-at-age (a4a)
Input data	DCF commercial catch-at-age data and MEDITS index-at-age, 2009-2025
Discards,BMS landings*, and bycatch	Discards included in the assessment
Indicators	MEDITS in GSAs 8, 9, 10 and 11, 2022 treated as missing
Other information	Combined sexes; ages 0-3+; F_{1-2}
Working group	STECF EWG 26-09

*BMS (Below Minimum Size) landings

Source: Own elaborations.

History of the catch and landings

Official reported catches by country, gear and GSA are presented in Table 3.10.6.

Table 3.10.5. Deep water rose shrimp in GSAs 8, 9, 10, 11: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes.

year	OTB GSA 8 FRA	OTH GSA 8 FRA	OTB GSA 8 ITA	OTH GSA 8 ITA	OTB GSA 9 ITA	TBN GSA 9 ITA	GNS GSA 9 ITA	OTH GSA 9 ITA
2002	0	0	0	0	0	0	0	0
2003	0	0	0	0	317	6	0	0
2004	0	0	0	0	367	4	4	0
2005	0	0	0	0	430	1	0	0
2006	0	0	0	0	462	0	0	0
2007	0	0	0	0	215	0	2	0
2008	0	0	0	0	253	0	1	0
2009	0	0	0	0	341	0	0	0
2010	4	0	0	0	500	0	0	0
2011	5	0	0	0	614	0	0	0
2012	6	0	0	0	629	0	0	0

year	OTB GSA 8 FRA	OTH GSA 8 FRA	OTB GSA 8 ITA	OTH GSA 8 ITA	OTB GSA 9 ITA	TBN GSA 9 ITA	GNS GSA 9 ITA	OTH GSA 9 ITA
2013	5	0	0	0	606	0	0	0
2014	2	0	0	0	606	0	0	0
2015	7	0	0	0	881	0	0	0
2016	8	0	0	0	871	0	0	0
2017	7	0	0	0	898	0	0	0
2018	7	0	0	0	954	0	0	0
2019	6	0	42	0	1044	0	0	5
2020	7	0	0	0	1068	1	0	0
2021	8	0	0	0	1186	0	0	0
2022	7	0	0	0	1034	0	0	10
2023	7	0	0	0	1143	0	4	4
2024	6	0	7	1	1084	0	0	10
2025	5	0	2	0	960	0	0	4

year	OTB GSA 10 ITA	OTH GSA 10 ITA	TBN GSA 10 ITA	GNS GSA 10 ITA	LLS GSA 10 ITA	OTB GSA 11 ITA	TBN GSA 11 ITA
2002	1452	407	0	0	0	86	1
2003	416	0	71	0	0	13	0
2004	544	2	3	3	1	232	0
2005	743	1	0	6	26	552	0
2006	1092	1	0	0	0	130	0
2007	534	0	0	0	0	79	0
2008	400	0	0	0	0	46	0
2009	386	0	0	0	0	22	0
2010	372	0	0	0	0	23	0
2011	405	0	0	3	0	53	0
2012	459	0	0	4	0	42	0
2013	606	0	0	0	0	23	0

year	OTB GSA 10 ITA	OTH GSA 10 ITA	TBN GSA 10 ITA	GNS GSA 10 ITA	LLS GSA 10 ITA	OTB GSA 11 ITA	TBN GSA 11 ITA
2014	512	0	0	0	0	30	0
2015	538	22	0	0	0	39	0
2016	549	0	0	0	0	46	0
2017	522	0	0	1	0	48	0
2018	555	0	0	0	0	209	0
2019	666	2	0	0	0	152	0
2020	367	0	0	0	0	130	0
2021	533	0	0	0	0	154	0
2022	487	1	0	0	0	148	0
2023	365	2	0	0	0	71	0
2024	331	0	0	0	0	89	0
2025	306	0	0	0	0	102	0

Source: MS data submission under the 2026 Mediterranean and Black Sea data call - MARE/D1/CO (2026).

Partial Fishing Mortality by fleet and GSA

Mean partial fishing mortality by fleet and GSA over the three most recent years is reported in Table 3.10.6.

Table 3.10.6. Deep water rose shrimp in GSAs 8, 9, 10, 11: Partial Fishing Mortality by country, gear and GSA (average over 3 most recent years).

Age	OTB GSA 8 FRA	OTB GSA 8 ITA	OTB GSA 9 ITA	OTB GSA 10 ITA	OTB GSA 11 ITA
0	0.000	0.000	0.004	0.001	0.000
1	0.005	0.004	0.775	0.339	0.052
2	0.009	0.007	1.371	0.243	0.179
3	0.009	0.007	1.413	0.121	0.259

Source: Own elaborations.

3.11 Summary sheet for red mullet in GSA 9

STECF advice on stock status

STECF EWG 26-09 advises that when the precautionary approach is applied, catches should be no more than 520 tonnes in 2027.

Stock development over time

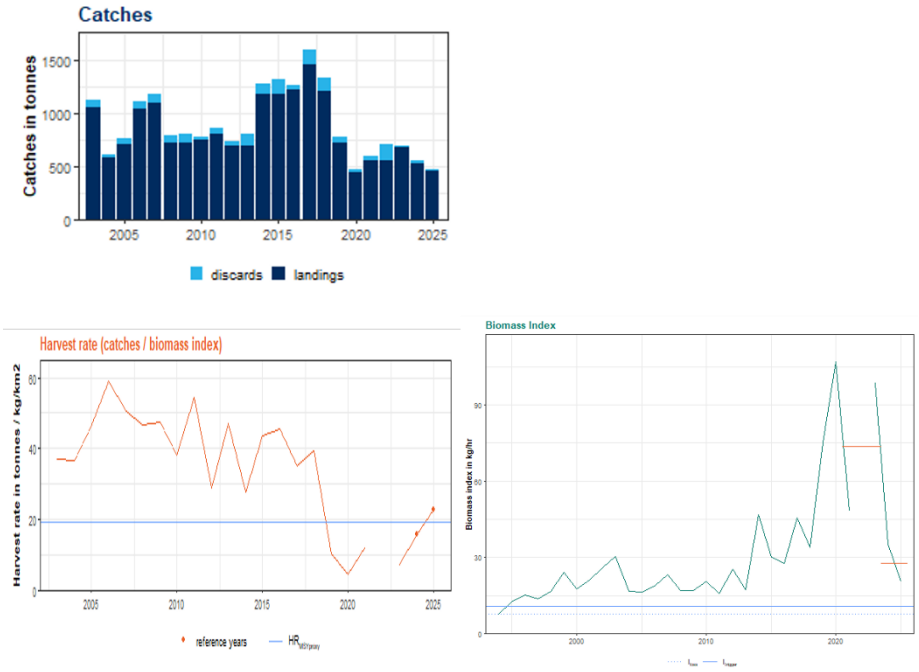
Catches show an increasing pattern up to 2018, and then a steady decrease until 2025 (Figure 3.11.1, top). The harvest rate shows a slight decreasing pattern since first years of the time series and after 2018 it drops significantly; after 2024 it shows an increase (Figure 3.11.1, bottom left). The biomass index remains stable between 2003 and 2013 and then it shows some increasing with peaks in 2020 and 2023 (Figure 3.11.1, bottom right).

Table 3.11.1. Red mullet in GSA 9: Assessment summary. Weights are in tonnes.

Year	Biomass index	Landings (tonnes)	Discards (tonnes)	Total Catch
2003	30.27	1056.7	63.9	1121
2004	16.81	580.7	37.0	618
2005	16.40	708.5	50.9	759
2006	18.87	1049.6	63.6	1113
2007	23.32	1096.0	86.2	1182
2008	16.92	727.1	62.0	789
2009	17.05	728.3	80.1	808
2010	20.56	747.9	35.1	783
2011	15.85	805.5	55.7	861
2012	25.37	692.9	40.3	733
2013	17.30	693.9	117.2	811
2014	46.73	1181.4	105.6	1287
2015	30.24	1183.4	132.9	1316
2016	27.69	1221.6	41.2	1263
2017	45.59	1460.7	140.1	1601
2018	34.07	1204.8	131.5	1336
2019	75.06	725.7	50.8	776
2020	106.97	452.7	27.7	480
2021	48.32	552.0	49.9	602
2022	NA	554.1	153.7	708
2023	98.75	679.5	18.5	698
2024	35.11	530.5	21.6	552
2025	20.56	460.5	6.3	467

Source: MS data submission under the 2025 Mediterranean and Black Sea data call - MARE/D1/CO (2025).

Figure 3.11.1. Red mullet in GSA 9: Summary of the stock assessment. Time series of catches (landings and discards, top); harvest rate (catches/biomass index, bottom left), where the blue line represents the $HR_{MSY\ proxy}$; and biomass index (bottom right), where the blue line represents Itrigger, the blue dotted line represents Iloss, and the two orange segments represent the mean index of 2024-2025 and of 2021-2023.



Source: Own elaborations.

Stock and exploitation status

Fishing pressure proxy on the stock is above the $HR_{MSY\ proxy}$ (Figure 3.11.1, bottom left) and the stock-size index is also above $I_{trigger}$ (Figure 3.11.1, bottom right), which indicates that the stock is at healthy size, although current fishing pressure is too high (Table 3.11.2).

Table 3.11.2. Red mullet in GSA 9: State of the stock and fishery relative to reference points.

Status	2025
F / $F_{MSY\ proxy}$	F > $F_{MSY\ proxy}$
B / MSY $B_{trigger\ proxy}$	B > MSY $B_{trigger\ proxy}$

Source: Own elaborations.

Catch scenarios

The ICES framework for category 3 stocks was applied following the constant harvest rate (chr) rule with a multiplier m=0.5 (method 2.2, ICES, 2022). The MEDITS survey index was used an indicator of stock development. The advice is based on the most recent biomass index, multiplied by a MSY proxy harvest rate, a biomass safeguard, and a precautionary multiplier.

Table 3.11.3. Red mullet in GSA 9: Basis for the catch scenarios.

Biomass index	
I: most recent biomass index (I2025)	21 kg/km^2
MSY proxy harvest rate	
HRMSYproxy: MSY proxy harvest rate (average of the ratio of catch to biomass index for the years for which f>1, where f=Lmean/LF=M)	19.2 tones / kg/km^2
Biomass safeguard	
Index trigger value (Itrigger=Iloss x 1.4)	10.7 kg / km2
b: multiplier for index relative to trigger, min{I2025/Itrigger, 1}	1.00
Precautionary multiplier to maintain biomass above Blim with 95% probability	
m: multiplier (generic multiplier based on life history)	0.50
Catch advice calculations	
Chr calculation (I*HR*b*m)	198 tonnes
Ay: previous catch advice (adviced catch for 2025)	743 tonnes
Stability clause (+20%/ - 30%, chr calculation compared to Ay, only applied if b=1)	0.7
Catch advice for 2027 (I * HR * b * m)	520 tonnes
% advice change	-30%

Source: Own elaborations.

Basis of the advice

Table 3.11.4. Red mullet in GSA 9: Basis for the catch scenarios.

Advice basis	MSY approach (ICES category 3). Method 2.2.
Management plan	Regulation (EU) 2019/1022 of the European Parliament and of the Council of 20 June 2019 establishing a multiannual plan for the fisheries exploiting demersal stocks in the western Mediterranean Sea and amending Regulation (EU) No 508/2014. The multiannual plan includes effort (fishing days".

Source: Own elaborations.

Quality of the assessment

The a4a model tested for the assessment of red mullet in GSA 9 produced overall good residuals, but resulted in an unreliable retrospective analysis. This behavior of the retrospective analysis was likely influenced by the high variability of the abundance index, especially in the last years. Given the reduced robustness of the assessment, the ICES Category 3 method 2.2 was applied as a more precautionary and stable approach.

Issues relevant for the advice

No additional relevant issues for the advice.

Reference points

Table 3.11.5. Red mullet in GSA 9: Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	10.7	Index trigger value (Itrigger), defined as Itrigger = Iloss × 1.4.	STECF EWG 26-09
	F_{MSY}	1	$L_{mean}/L_{F=M}$; Mean catch length divided by MSY proxy reference length ($L_{F=M}$).	STECF EWG 26-09
Precautionary approach	B_{lim}		Not defined	
	B_{pa}		Not Defined	
	B_{MSY}		Not Defined	
	F_{pa}		Not Defined	
Management plan	MSY $B_{trigger}$		Not Defined	
	B_{lim}			
	F_{MSY}		Not Defined	
	target range F_{lower}			
	target range F_{upper}			

Source: Own elaborations.

Basis of the assessment

Table 3.11.6. Red mullet in GSA 9: Basis of the assessment and advice.

Assessment type	Survey biomass trend applying the chr rule for advice (ICES, 2022)
Input data	DCF commercial data (landings and discards) and scientific survey (MEDITS) data
Discards, BMS landings*, and bycatch	Discards included
Indicators	Length-based indicator
Other information	
Working group	STECF EWG 26-09

*DCF: Data Collection Framework.

Source: Own elaborations.

History of the advice, catch, and management

Table 3.11.7. Red mullet in GSA 9: STECF advice and catches reported to STECF. All weights are in tonnes.

Year	STECF advice	Predicted catch corresponding to advice	STECF Catches
2022	$F = F_{MSY}$	1033	712.7
2023	$F = F_{MSY}$	861.9	796
2024	$F = F_{MSY}$	976	688
2025	$F = F_{MSY}$	743	467
2026	F = FMSY	652.4	
2027	MSY approach (ICES category 3 method 2.2)	520	

Source: Own elaborations.

History of the catch and landings

Table 3.11.8. Red mullet in GSA 9: History of commercial landings; official reported values are presented by country and GSA 9; all weights are in tonnes.

Year	Italy GSA9	Total landings
2003	1056.7	1056.7
2004	580.7	580.7
2005	708.5	708.5
2006	1049.6	1049.6
2007	1096.0	1096.0
2008	727.1	727.1
2009	728.3	728.3
2010	747.9	747.9
2011	805.5	805.5
2012	692.9	692.9
2013	693.9	693.9
2014	1181.4	1181.4
2015	1183.4	1183.4
2016	1221.6	1221.6
2017	1460.7	1460.7
2018	1204.8	1204.8
2019	725.7	725.7
2020	452.7	452.7
2021	552.0	552.0
2022	554.1	554.1
2023	679.5	679.5
2024	530.5	530.5
2025	460.5	460.5

Source: MS data submission under the 2025 Mediterranean and Black Sea data call - MARE/D1/CO (2025).

3.12 Summary sheet for Red mullet in GSA 10

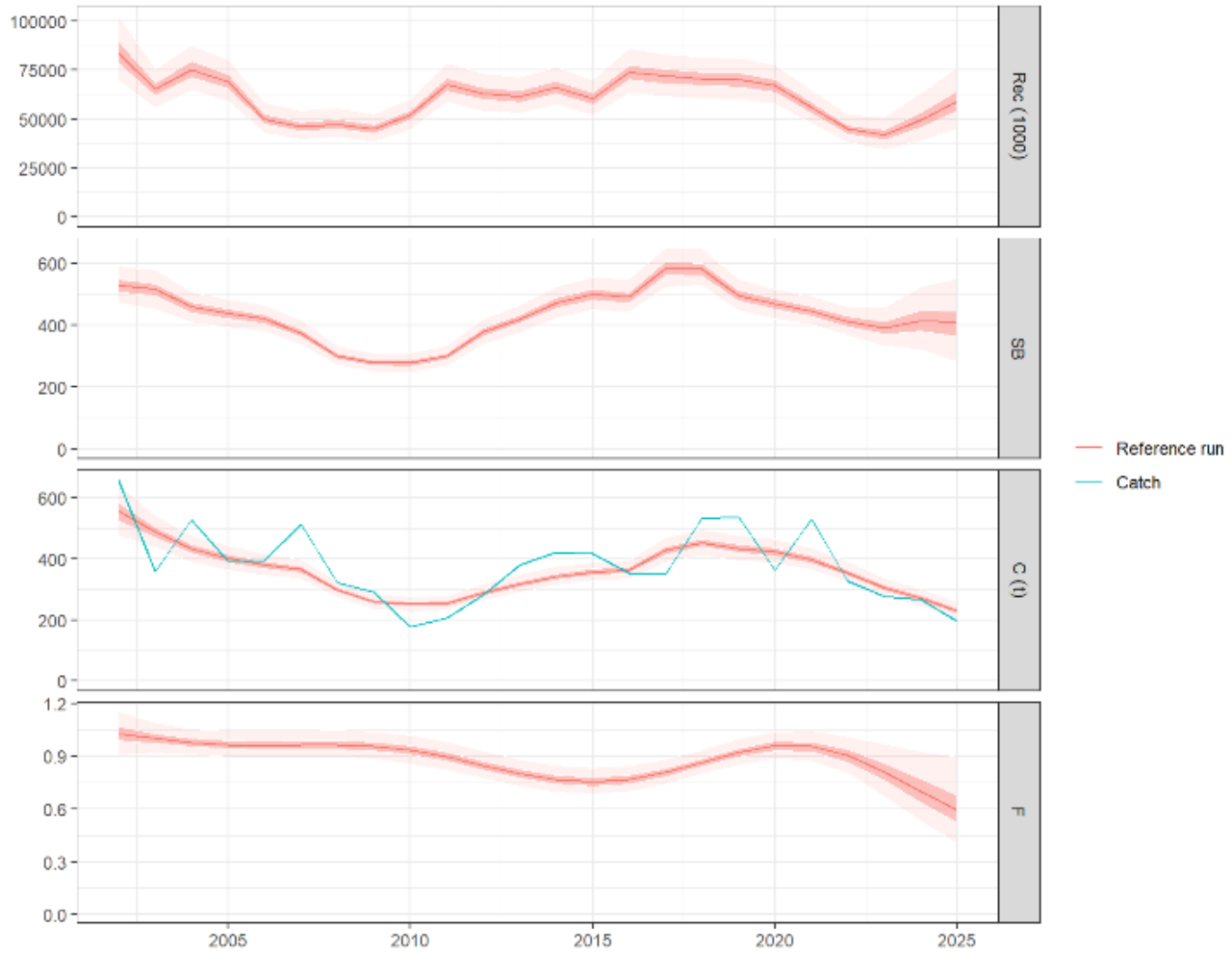
STECF advice on stock status

This is the first analytical assessment conducted for this stock. The estimated fishing mortality is above the F0.1 reference point (F/F0.1 = 2.07), indicating that the stock is subject to overfishing. When applying MSY considerations, STECF EWG 26-09 advises that fishing mortality in 2027 should not exceed F01 = 0.28. Given the absence of previous assessments and historical estimates of exploitation, the assessment results should be interpreted with caution and the advice should be applied on a precautionary basis.

Stock development over time

Catches show a decreasing trend since 2020 up to 2026. SSB is decreasing since 2018 and signal of stability in the last two years. F is decreasing in the last five years.

Figure 3.12.1. Red mullet in GSA 10: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (red lines). The blue line represents the reported catches time series.



Source: Own elaborations.

Table 3.12.1. Red mullet in GSA 10: Assessment summary. Weights are in tonnes. Catches estimated by the model.

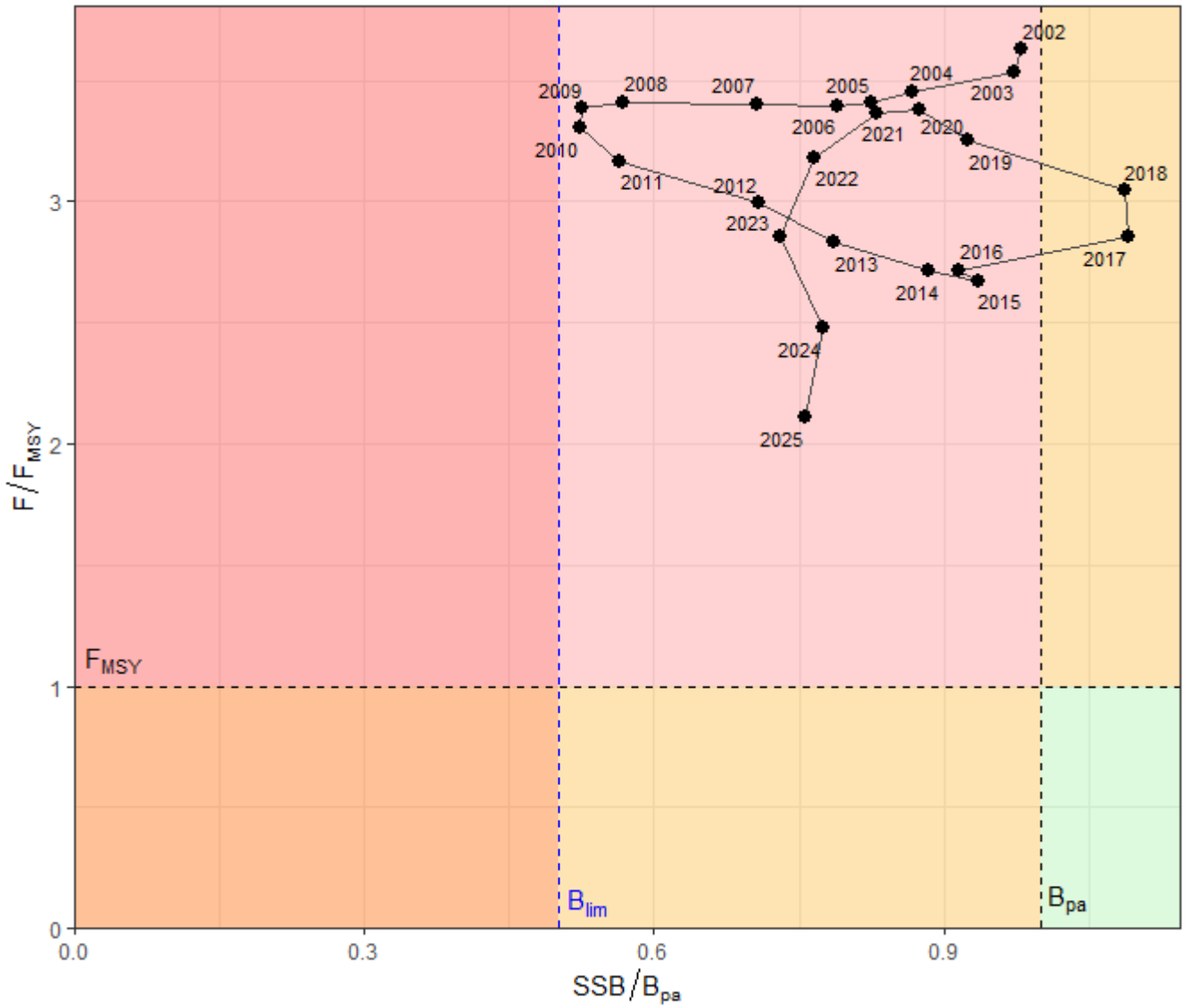
Year	Recruitment (1000s)	SSB (t)	Catch (t)	F(1-3)
2002	84440	524	544	1.03
2003	65116	520	488	1.00
2004	75271	463	436	0.98
2005	69284	441	403	0.96
2006	50099	422	382	0.96
2007	46246	377	365	0.96
2008	47391	303	299	0.97
2009	45048	281	261	0.96
2010	51931	280	253	0.93
2011	67793	302	255	0.90
2012	62998	378	289	0.85
2013	61694	420	319	0.80
2014	66253	472	343	0.77
2015	60486	499	357	0.76
2016	74062	489	364	0.77
2017	71633	582	428	0.81
2018	70516	580	452	0.86
2019	70102	493	434	0.92
2020	67154	467	422	0.96
2021	55695	443	398	0.95
2022	44811	409	354	0.90
2023	41922	390	306	0.81
2024	49562	413	273	0.70
2025	58960	404	232	0.60

Source: Own elaborations.

Stock and exploitation status

The current level of fishing mortality is above the reference point F0.1 (0.28), used as proxy of FMSY. SSB in 2025 (404) is below Bpa (534) and below BMSY (1068) (F > FMSY, SSB > Blim, and SSB < Bpa).

Figure 3.12.2. Red mullet in GSA 10: Kobe plot showing the stock trajectory relative to biological reference points (F/FMSY and SSB/Bpa). The blue dashed line indicates SSB/Blim. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below Blim, representing a risk of impaired recruitment.



Source: Own elaborations.

Catch scenarios

No short term forecast needed for this stock.

Basis of the advice

Table 3.12.2. Red mullet in GSA 10: The basis of the advice.

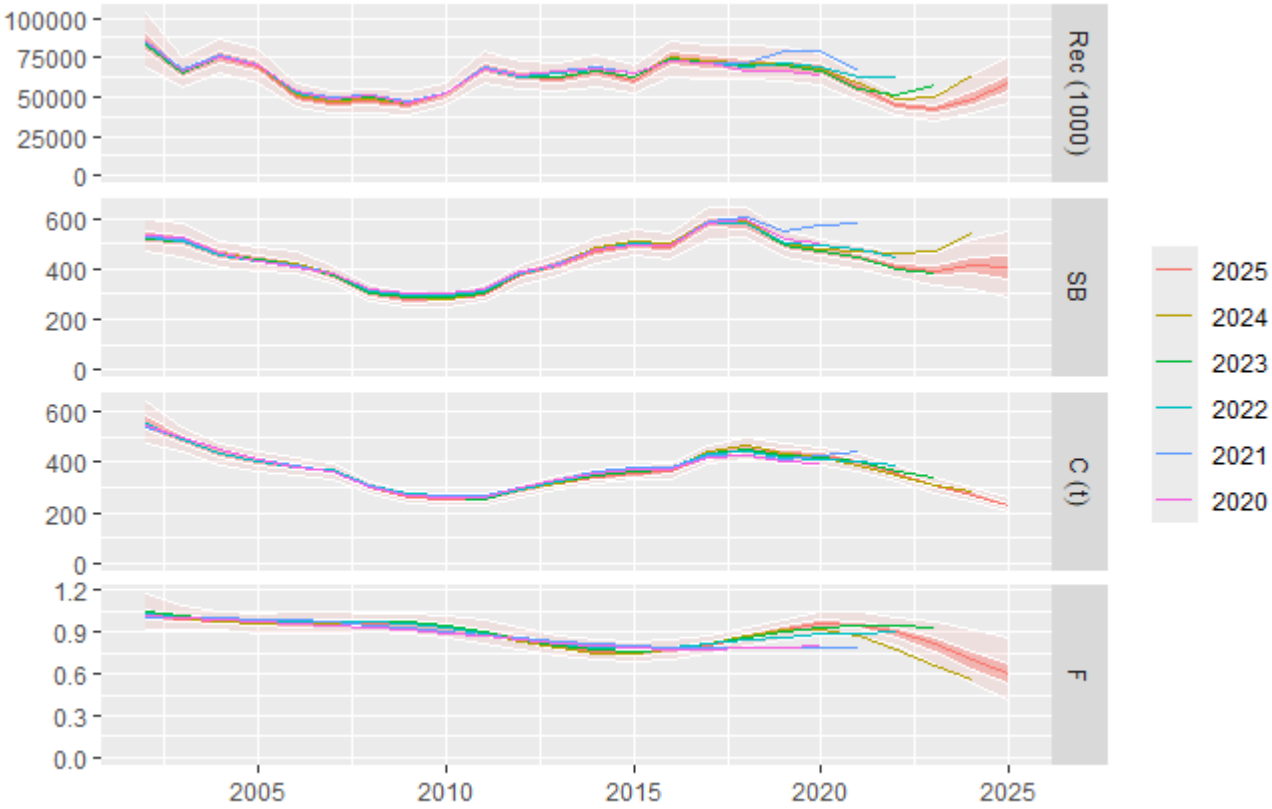
Advice basis	Western Mediterranean multiannual plan
Management plan	An EU Western Mediterranean multiannual plan (MAP) has been agreed by the EU for this stock (EU, 2019).

Source: Own elaborations.

Quality of the assessment

A new assessment model was presented and achieved convergence for the first time. Overall, the model diagnostics, including the retrospective analysis, were considered acceptable. Nevertheless, some instability remains in the terminal years, particularly in the estimates of fishing mortality. This instability is likely associated with important limitations in the input data, including the absence of the MEDITS survey in 2022 and reduced survey coverage in 2020 and 2023, when the number of hauls was approximately 20–50% below that required by the MEDITS protocol. Additional uncertainty arises from missing or incomplete commercial catch LFD data during the most recent years of the time series. The assessment results should therefore be interpreted with caution, particularly because no historical series of accepted assessments is available to evaluate its stability over time. Model estimates and configuration may need to be revised as new data become available and successive assessments provide further evidence of robustness.

Figure 3.12.3. Red mullet in GSA 10: retrospective analysis.



Source: Own elaborations.

Issues relevant for the advice

Changed assessment model as outlined above.

Reference points

Table 3.12.3. Red mullet in GSA 10: Reference points, values, and their technical basis, they were estimated in EWG 26-09.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY Btrigger		Not Defined	
MSY approach	FMSY	0.28	F0.1 as proxy for FMSY	STECF EWG 26-09
Precautionary approach	Blim	268	Default based on 25% BF0.1 and GM recruitment	STECF EWG 26-09
Precautionary approach	Bpa	534	Blim * 2	STECF EWG 26-09
Precautionary approach	BMSY	1068	BF0.1	STECF EWG 25-09
Precautionary approach	Fpa		Not Defined	

Source: Own elaborations.

Basis of the assessment

Table 3.12.4. Red mullet in GSA 10: Basis of the assessment and advice.

Assessment type	Statistical catch at age
Input data	DCF commercial data (landings and discards) and scientific survey (MEDITS) data
Discards, BMS landings*, and bycatch	Discards included
Indicators	
Other information	
Working group	STECF EWG 26-09

*BMS (Below Minimum Size) landings

Source: Own elaborations.

History of the catch and landings

Table 3.12.5. Red mullet in GSA 10: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes.

year	Bottom otter trawl GSA 10 ITA	Trammel nets GSA 10 ITA	Gillnets GSA 10 ITA
2002	465	195	0
2003	275	83	0
2004	417	96	16
2005	266	102	25
2006	293	68	35
2007	276	212	24
2008	190	125	7
2009	186	98	7
2010	136	26	15
2011	159	35	13
2012	231	25	26
2013	285	53	43
2014	371	42	8
2015	367	37	13
2016	320	31	2
2017	319	30	1
2018	421	74	37
2019	427	77	35
2020	332	24	9
2021	478	40	13
2022	279	30	18
2023	227	43	6
2024	198	35	33
2025	136	47	14

Source: MS data submission under the 2026 Mediterranean and Black Sea data call - MARE/D1/CO (2026).

Partial Fishing Mortality by fleet and GSA

Table 3.12.6. Red mullet in GSA 10: Partial Fishing Mortality by country, gear and GSA (average over 3 most recent years).

age	Bottom otter trawl GSA 9 ITA	Trammel nets GSA 9 ITA	Gillnets GSA 9 ITA
0	0.00	0.00	0.00
1	0.30	0.05	0.04
2	0.57	0.16	0.03
3	0.77	0.17	0.02
4+	0.62	0.12	0.17

Source: Own elaborations.

3.13 Summary sheet for Norway lobster in GSA 9

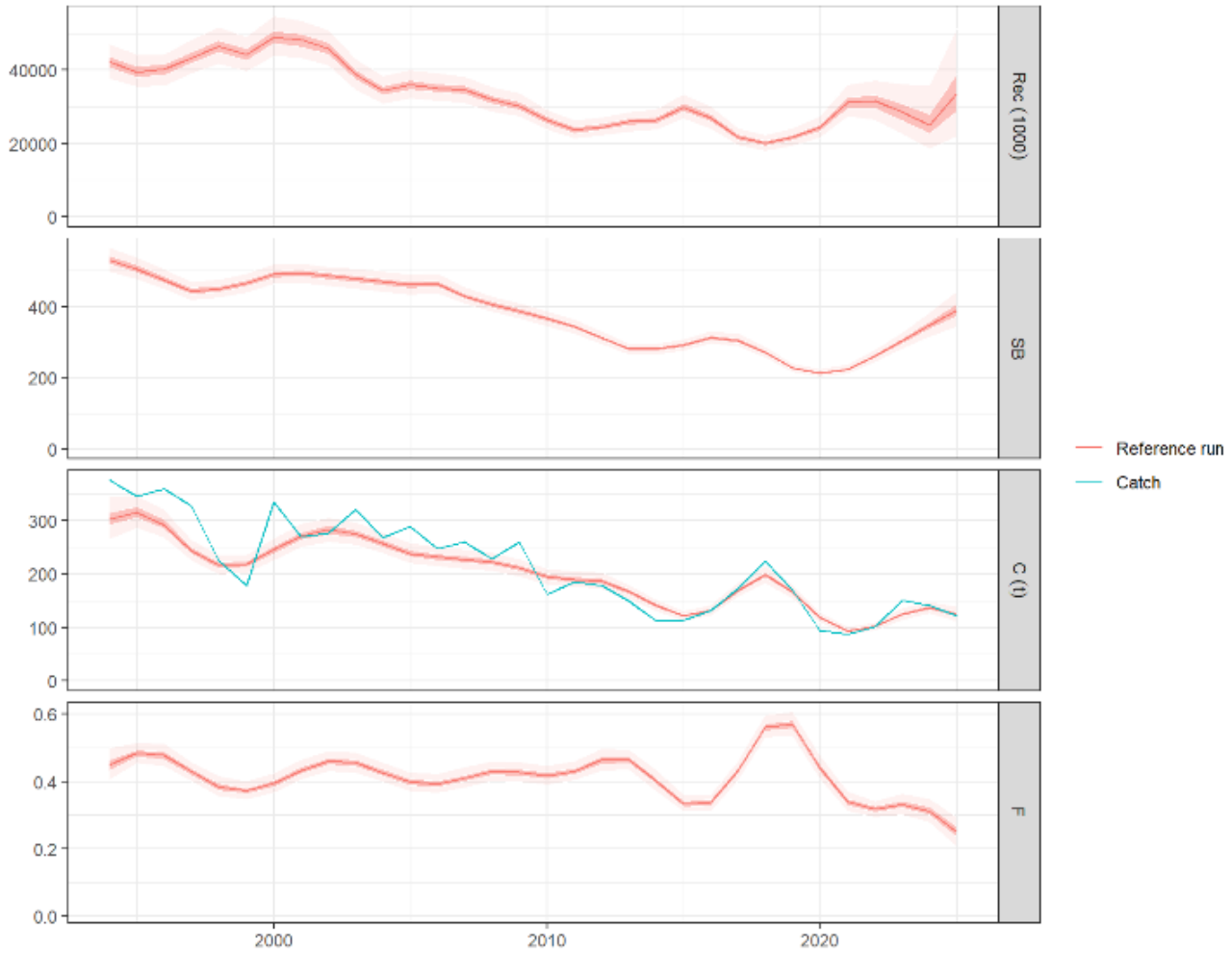
STECF advice on stock status

STECF EWG 26-09 reports that when MSY considerations are applied the fishing mortality in 2027 should be no more than 0.14.

Stock development over time

Catches of Norway lobster show a decreasing pattern until 2015, then they started to oscillate around 150 tons. Catch value in 2017 has been revised by EWG 26-09 adopting values from FDI data call. SSB follows a similar decreasing trend until 2020, then it constantly increased. The assessment shows that recruitment dropped in early 2000's and stabilized around 25 million in 2011-2024. Fbar (2-6) shows a declining trend for the past three years, having been at the lower levels since the beginning of the time series.

Figure 3.13.1. Norway lobster in GSA 9: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (red lines). The blue line represents the reported catches time series.



Source: Own elaborations.

Table 3.13.1. Norway lobster in GSA 9: Assessment summary. Weights are in tonnes. Catches estimated by the model.

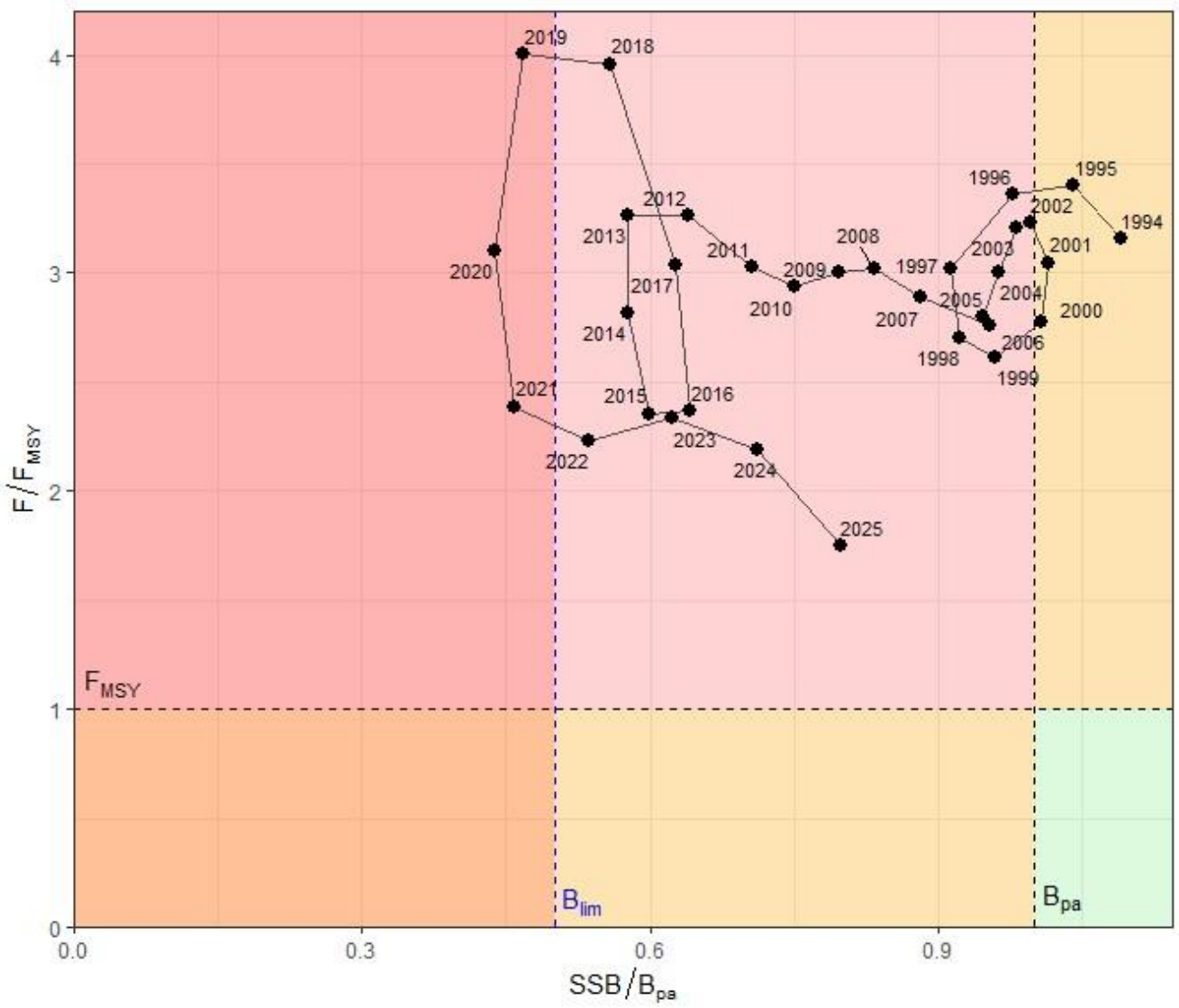
Year	Recruitment (1000s)	SSB (t)	Catch (t)	F(2-6)
1994	42187	529	303	0.45
1995	39638	506	315	0.48
1996	40095	475	293	0.48
1997	43496	443	244	0.43
1998	46484	448	216	0.38
1999	44248	466	218	0.37
2000	49077	490	245	0.39
2001	48235	493	271	0.43
2002	46000	484	283	0.46
2003	38699	476	275	0.46
2004	34478	468	257	0.43
2005	35939	460	238	0.40
2006	35203	463	232	0.39
2007	34631	429	227	0.41
2008	31954	405	222	0.43
2009	30294	387	212	0.43
2010	26370	365	195	0.42
2011	23694	343	190	0.43
2012	24525	311	187	0.46
2013	25766	280	167	0.46
2014	26415	280	141	0.40
2015	30000	291	121	0.33
2016	26923	312	132	0.34
2017	21698	305	169	0.43
2018	20031	271	199	0.56
2019	21640	227	167	0.57
2020	24273	213	118	0.44
2021	31189	223	94	0.34
2022	31385	261	102	0.32
2023	28597	303	125	0.33
2024	25431	346	137	0.31
2025	33661	388	124	0.25

Source: Own elaborations.

Stock and exploitation status

The fishing mortality trajectory has been continuously decreasing in last 6 years, allowing the SSB to rebuild above Blim. The current level of fishing mortality is still above the reference point F0.1, used as proxy of FMSY (0.14). SSB in 2025 is below Bpa and above Blim (F > FMSY, SSB > Blim, and SSB < Bpa).

Figure 3.13.2. Norway lobster in GSA 9: Kobe plot showing the stock trajectory relative to biological reference points (F/FMSY and SSB/Bpa). The blue dashed line indicates SSB/Blim. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below Blim, representing a risk of impaired recruitment.



Source: Own elaborations.

Catch scenarios

No short term forecast needed for this stock.

Basis of the advice

Table 3.13.2. Norway lobster in GSA 9: The basis of the advice.

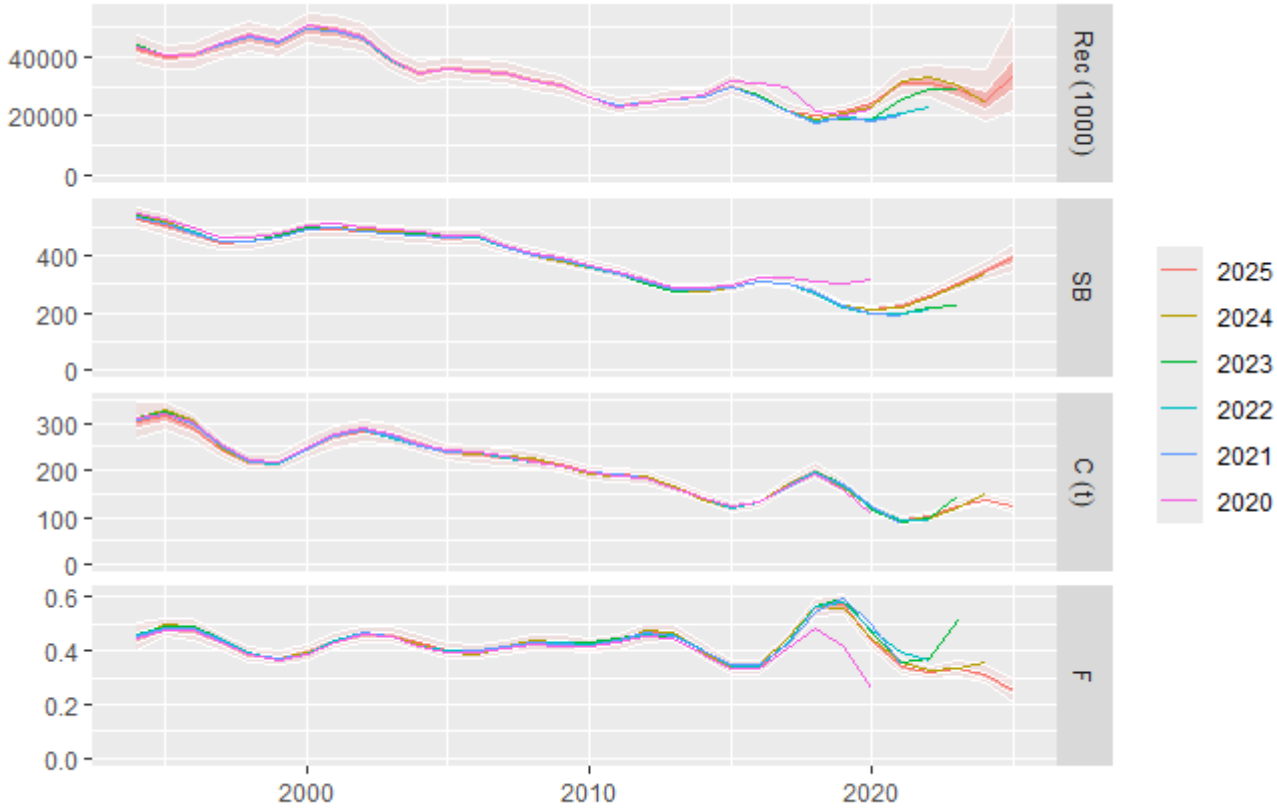
Advice basis	Western Mediterranean multiannual plan
Management plan	An EU Western Mediterranean multiannual plan (MAP) has been agreed by the EU for this stock (EU, 2019).

Source: Own elaborations.

Quality of the assessment

The stock assessment model is an update of the model implemented by EWG 25-09 (STECF 2025a). The model diagnostics evaluated were considered acceptable by EWG 26-09. Some retrospective patterns are observed for peel 5. The EWG commented on the effect of the large catches observed in years 2017-2018 on retrospective stability. It is worth to mention that data in 2017 were corrected, using data from the FDI data call, because of a revision of official data that has not been correctly implemented throughout data calls medbs and FDI (STECF 2025b). A sensitivity analysis was attempted by EWG 26-09 (available as annex), focusing on the use of survey by strata, but did not led to any major improvement of model diagnostics.

Figure 3.13.3. Norway lobster in GSA 9: retrospective analysis.



Source: Own elaborations.

Issues relevant for the advice

As noted in previous section, catches in 2017 are not coherent among data calls.

Reference points

Table 3.13.3. Norway lobster in GSA 9: Reference points, values, and their technical basis. Reference points were re-computed by EWG 26-09.

Framework	Reference point	Value	Technical basis	Source
MSY approach	FMSY	0.14	F0.1 as proxy for FMSY	STECF EWG 26-09
Precautionary approach	Blim	243	Segreg SR; Blim as 0.25 BMSY	STECF EWG 26-09
Precautionary approach	Bpa	486	Blim * 2	STECF EWG 26-09
Precautionary approach	BMSY	914	BF0.1	STECF EWG 26-09
Precautionary approach	Fpa		Not Defined	

Source: Own elaborations.

Basis of the assessment

Table 3.13.4. Norway lobster in GSA 9: Basis of the assessment and advice.

Table 3.13.4. Norway lobster in GSA 9: Basis of the assessment and advice.

Assessment type	Statistical catch at age
Input data	DCF commercial data (landings and discards) and scientific survey (MEDITS) data
Discards, BMS landings*, and bycatch	Discards included
Indicators	
Other information	
Working group	STECF EWG 26-09

*BMS (Below Minimum Size) landings

Source: Own elaborations.

History of the catch and landings

The stock assessment of NEP9 includes historical catches from the RECFISH project (Ligas, 2019). Data for 2017 are from FDI data call (STECF 2025b).

Table 3.13.5. Norway lobster in GSA 9: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes.

year	Bottom otter trawl GSA 9 ITA	Trammel nets GSA 9 ITA	Gillnets GSA 9 ITA	Other GSA 9 ITA
1994	376	0	0	0
1995	345	0	0	0
1996	359	0	0	0
1997	728	0	0	0
1998	226	0	0	0
1999	179	0	0	0
2000	335	0	0	0
2001	270	0	0	0
2002	277	0	0	0
2003	315	6	0	0
2004	269	0	0	0
2005	288	0	0	0
2006	247	0	0	0
2007	261	0	0	0
2008	228	0	0	0
2009	259	0	0	0
2010	163	0	0	0
2011	185	0	0	0
2012	179	0	0	0
2013	149	0	0	0
2014	112	0	0	0
2015	114	0	0	0
2016	131	0	0	0

year	Bottom otter trawl GSA 9 ITA	Trammel nets GSA 9 ITA	Gillnets GSA 9 ITA	Other GSA 9 ITA
2017	174	0	0	0
2018	224	0	0	0
2019	171	0	0	0
2020	94	0	0	0
2021	87	0	0	0
2022	101	0	0	0
2023	150	0	0	0
2024	140	0	0	2
2025	122	0	0	0

Source: MS data submission under the 2026 Mediterranean and Black Sea data call - MARE/D1/CO (2026). Data in 2017 adopted from FDI data call. Data for 1994-2002 retrieved from the RECFISH project.

Partial Fishing Mortality by fleet and GSA

No partial fishing mortality needed for this stock.

3.14 Summary sheet for Norway lobster in GSA 11

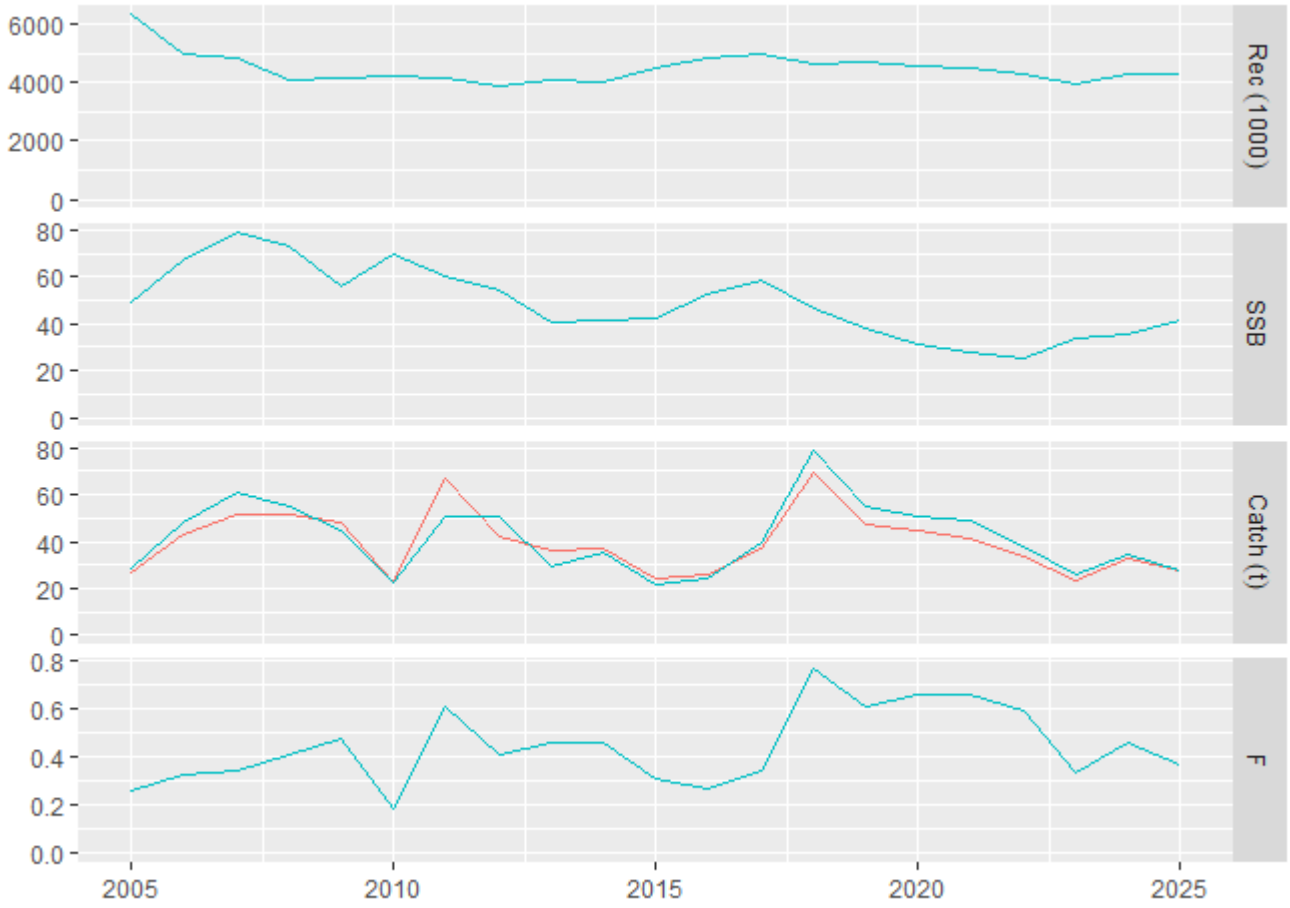
STECF advice on stock status

STECF EWG 26-09 advises that the Norway lobster stock in GSA11 is currently overexploited. The SSB is below the level associated with F0.1, while F is above it, pointing to an unfavourable stock status and excessive exploitation pressure.

Stock development over time

Catches show a fluctuating pattern over the period, with an overall decreasing trend from 2018 to the last year. SSB has generally declined since 2008, reaching its lowest level in 2022, and has shown a clear recovery since then. F has displayed substantial interannual variability, reaching a peak in 2018, followed by a general decreasing trend until 2022, with some fluctuations thereafter. In the most recent years, catches and SSB have increased, while F has remained relatively stable compared with the higher levels observed in 2017–2019.

Figure 3.14.1. Norway lobster in GSA 11: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (Blue lines). The red line represents the reported catches time series.



Source: Own elaborations.

Table 3.14.1. Norway lobster in GSA 11: Assessment summary. Weights are in tonnes. Catches estimated by the model.

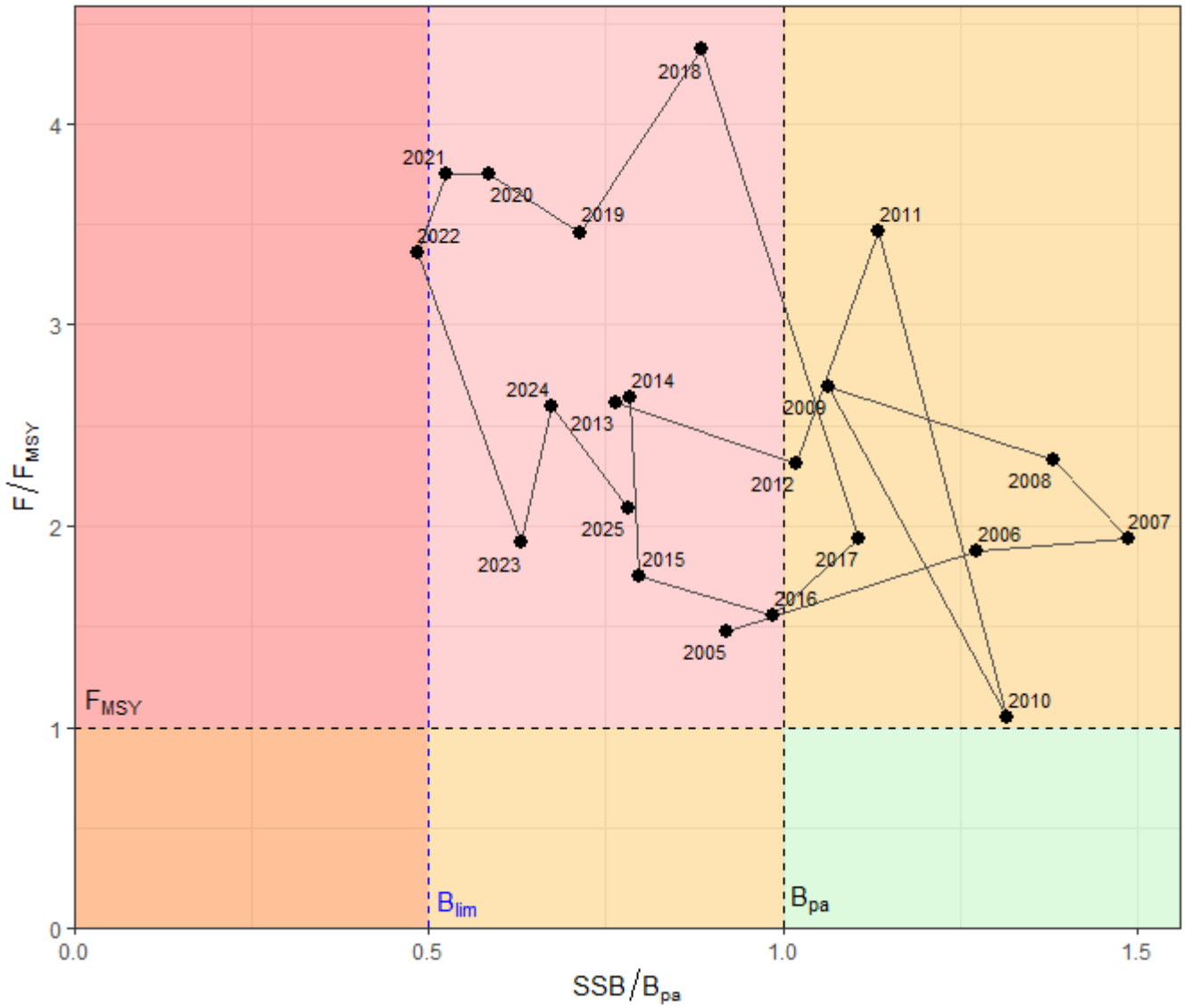
Year	Recruitment (1000s)	SSB (t)	Catch (t)	F(2-6)
2005	6305	49	27	0.26
2006	4974	67	43	0.33
2007	4847	79	51	0.34
2008	4063	73	52	0.41
2009	4164	56	48	0.47
2010	4186	70	22	0.18
2011	4117	60	67	0.61
2012	3884	54	42	0.41
2013	4073	40	36	0.46
2014	4003	42	37	0.46
2015	4515	42	24	0.31
2016	4846	52	26	0.27
2017	4993	59	38	0.34
2018	4630	47	70	0.77
2019	4661	38	48	0.61
2020	4535	31	44	0.66
2021	4462	28	41	0.66
2022	4300	26	34	0.59
2023	3949	33	24	0.34
2024	4284	36	33	0.46
2025	4262	41	28	0.37

Source: Own elaborations.

Stock and exploitation status

The current level of fishing mortality (0.37) is 2.096 above the reference point F0.1, used as proxy of FMSY (0.18). SSB in 2025 is estimated below Bpa and above BMSY (F > FMSY, SSB > Blim, and SSB < Bpa).

Figure 3.14.2. Norway lobster in GSA 11: Kobe plot showing the stock trajectory relative to biological reference points (F/FMSY and SSB/Bpa). The blue dashed line indicates SSB/Blim. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below Blim, representing a risk of impaired recruitment.



Source: Own elaborations.

Catch scenarios

No short term forecast needed for this stock.

Basis of the advice

Table 3.14.2. Norway lobster in GSA 11: The basis of the advice.

Advice basis	Western Mediterranean multiannual plan
Management plan	An EU Western Mediterranean multiannual plan (MAP) has been agreed by the EU for this stock (EU, 2019).

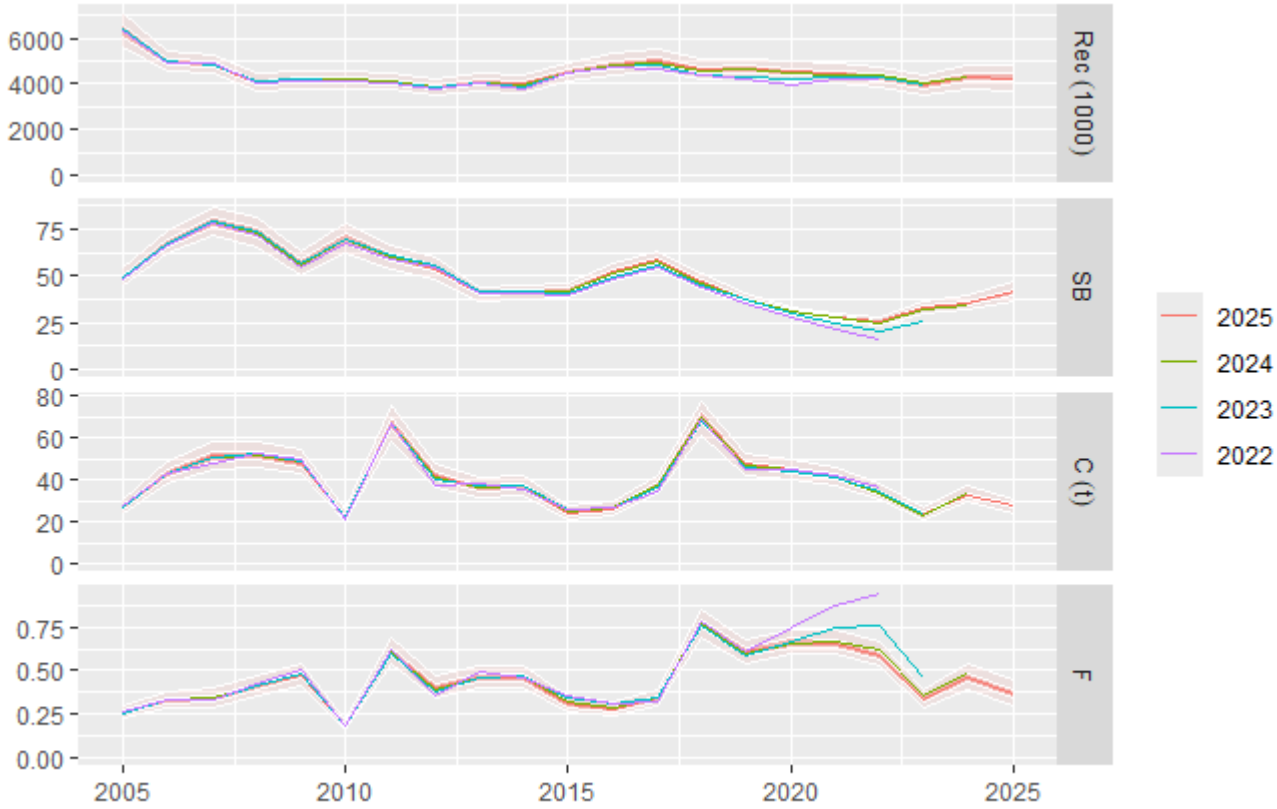
Source: Own elaborations.

Quality of the assessment

A revised assessment approach was adopted, as updating the previous model resulted in retrospective patterns that were considered unacceptable. Despite the changes implemented, the model remains highly unstable. The current configuration was considered the most appropriate among the alternatives explored, as it provided slightly improved diagnostics compared to the model developed during EWG 25-09. In particular, fixing the CV of the recruitment model at 0.1 was necessary to improve stability and achieve convergence. More generally, the quality and robustness of the assessment could potentially be improved by adopting a different assessment approach or exploring different stock/functional unit configuration, such as the area-based approach currently applied to Norway lobster in other areas of the North Atlantic and Mediterranean (ICES, 2026; GFCM, 2025). However, given the data currently available, such an approach would substantially reduce the amount of information available from the length-frequency distributions (LFDs), as the number of individuals measured is already very limited when the data are disaggregated at the quarterly level. This limitation is also reflected in the cohort consistency diagnostics for catches and in the high variability of the estimated catch-at-age compositions among years. The limited amount and representativeness of the available data may also be related to the fact that Norway lobster is not considered a main target species of the fleet in GSA11, as also reported by experts working in the area.

Several alternative model configurations were explored to address these data limitations and improve the overall performance of the assessment. These included: (i) increasing the weight assigned to survey information; (ii) decreasing the weight assigned to commercial catch information; and (iii) extending the assessment time series back to 1994, in order to make use of all available survey information while relying only on total commercial catches, although lacking information regarding the LFD,s from the RecFish project (Ligas, 2019), since official LFD data are available only from 2005 onwards. Unfortunately, none of these alternative configurations resulted in improved diagnostics. Therefore, despite the high level of instability and the fact that not all diagnostics were fully satisfactory, the proposed configuration remains the best-performing model among those explored and was considered to provide the most appropriate assessment given the available data and the current level of information. As additional years of data become available, further changes to the assessment model are likely to be required in the coming years.

Figure 3.14.3. Norway lobster in GSA 11: retrospective analysis.



Source: Own elaborations.

Issues relevant for the advice

Changed assessment model as outlined above. Since the model was changed, even the Reference Points were recomputed. However, the final perception on the status of the stock is not very different in comparison with last year assessment (STECF EWG 25-09).

Reference points

Table 3.14.3. Norway lobster in GSA 11: Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	FMSY	0.18	F0.1 as proxy for FMSY	STECF EWG 26-09
Precautionary approach	Blim	26	Default based on 25% BF0.1 and GM recruitment	STECF EWG 26-09
Precautionary approach	Bpa	53	Blim * 2	STECF EWG 26-09
Precautionary approach	BMSY	106	BF0.1	STECF EWG 26-09
Precautionary approach	Fpa		Not Defined	

Source: Own elaborations.

Basis of the assessment

Table 3.14.4. Norway lobster in GSA 11: Basis of the assessment and advice.

Assessment type	Statistical catch at age
Input data	DCF commercial data (landings and discards) and scientific survey (MEDITS) data
Discards, BMS landings*, and bycatch	Discards included
Indicators	
Other information	
Working group	STECF EWG 26-09

*BMS (Below Minimum Size) landings

Source: Own elaborations.

History of the catch and landings

Table 3.14.5. Norway lobster in GSA 11: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes.

year	Bottom otter trawl GSA 11 ITA
2002	32
2003	53
2004	60
2005	29
2006	48
2007	61
2008	55
2009	44
2010	23
2011	50
2012	50
2013	30
2014	35
2015	21
2016	24
2017	40
2018	79
2019	55
2020	50
2021	49
2022	38
2023	26
2024	35
2025	28

Source: MS data submission under the 2026 Mediterranean and Black Sea data call - MARE/D1/CO (2026).

Partial Fishing Mortality by fleet and GSA

No partial fishing mortality needed for this stock.

3.15 Summary sheet for blue and red shrimp in GSAs 1, 2

STECF advice on stock status

STECF EWG 26-09 advises that when the precautionary approach is applied, catches should be no more than 108 tonnes in 2027.

Stock development over time

Since 2007, catches have oscillated in a generally stable pattern. Notably, since 2019, there has been a slight upward trend in the catches (see Figure 3.15.1, top). The harvest rate fluctuated significantly over the years until 2019, after which it has remained more stable at lower values (see Figure 3.15.1, bottom left). The biomass index has shown considerable year-to-year variability, with a pronounced peak in 2000. Since 2021, the biomass index has increased, reaching its highest value in 2023, excluding the peak in 2000 (see Figure 3.15.1, bottom-right).

Table 3.15.1. Blue and red shrimp in GSAs 1, 2: Assessment summary. Weights are in tonnes.

Year	Biomass index	Landings (tonnes)	Discards (tonnes)	Total Catch
2002	1.91	246.8	0.00	246.8
2003	3.66	450.1	0.00	450.1
2004	1.96	294.5	0.00	294.5
2005	2.92	314.3	0.65	314.95
2006	3.25	426.3	0.00	426.3
2007	1.23	257	0.00	257
2008	0.894	182.8	0.00	182.8
2009	2.15	212.3	2.58	214.88
2010	0.794	200.8	0.58	201.38
2011	0.641	178.8	0.17	178.97
2012	2.66	193.6	0.12	193.72
2013	0.501	188.9	0.08	188.98
2014	2.74	225	0.02	225.02
2015	1.82	222.1	0.25	222.35
2016	2.71	178.3	0.3	178.6
2017	1.76	147.2	0.22	147.42
2018	1.45	170.7	0.05	170.75
2019	0.64	204.1	0.14	204.24
2020	NA	169.1	0.00	169.1
2021	2.28	134.6	0.18	134.78
2022	2.48	173.7	0.23	173.93
2023	4.39	197.6	0.11	197.71
2024	3.9	198.6	0.24	198.84
2025	2.43	152.8	0.00	152.8

Source: MS data submission under the 2026 Mediterranean and Black Sea data call - MARE/D1/CO (2026).

Figure 3.15.1. Blue and red shrimp in GSAs 1, 2: Summary of the stock assessment. Time series of catches (top); harvest rate (catches/biomass index, bottom left), where the blue line represents de $HR_{MSY\ proxy}$; and biomass index (bottom right), where the blue line represents $I_{trigger}$, the blue dotted line represents I_{loss}, and the two orange segments represent the mean index of 2021, 2022, and 2023 and of 2024 and 2025.



Source: own elaborations.

Stock and exploitation status

Fishing pressure proxy on the stock is below the $HR_{MSY\ proxy}$ (Figure 3.15.1, bottom left) and the stock-size index is above $I_{trigger}$ (Figure 3.15.1, bottom right),

Table 3.15.2. Blue and red shrimp in GSAs 1, 2: State of the stock and fishery relative to reference points.

Status	2025
F / $F_{MSY\ proxy}$	F < $F_{MSY\ proxy}$
B / MSY $B_{trigger\ proxy}$	B > MSY $B_{trigger\ proxy}$

Source: own elaborations.

Catch scenarios

The ICES framework for category 3 stocks was applied following the constant harvest rate (chr) rule with a multiplier m=0.5 (method 2.2, ICES, 2022). The MEDITS survey index was used an indicator of stock development. The advice is based on the most recent biomass index, multiplied by a MSY proxy harvest rate, a biomass safeguard, and a precautionary multiplier.

Table 3.15.3. Blue and red shrimp in GSAs 1, 2: Basis for the catch scenarios.

Biomass index	
I: most recent biomass index (I2025)	2.4 kg/km^2
MSY proxy harvest rate	
HRMSYproxy: MSY proxy harvest rate (average of | the ratio of catch to biomass index for the | years for which f>1, where f=Lmean/LF=M)	82 tonnes / kg/km^2
Biomass safeguard	
Index trigger value (Itrigger=Iloss x 1.4)	0.70 kg / km2
b: multiplier for index relative to trigger, min{I2024/Itrigger, 1}	1.00
Precautionary multiplier to maintain biomass above Blim with 95% probability	
m: multiplier (generic multiplier based on life history)	0.50
Catch advice calculations	
Chr calculation (I*HR*b*m)	100 tonnes
Ay: previous catch advice (adviced catch for 2025)	154 tonnes
Stability clause (+20%/ - 30%, chr calculation compared to Ay, only applied if b=1)	0.7
Catch advice for 2026 (I * HR * b * m)	108 tonnes
% advice change	-30 %

Source: own elaborations.

Basis of the advice

Table 3.15.4. Blue and red shrimp in GSAs 1, 2: Basis for the catch scenarios.

Advice basis	MSY approach (ICES category 3). Method 2.2.
Management plan	Regulation (EU) 2019/1022 of the European Parliament and of the Council of 20 June 2019 establishing a multiannual plan for the fisheries exploiting demersal stocks in the western Mediterranean Sea and amending Regulation (EU) No 508/2014. The multiannual plan includes effort (fishing days) and catch limits at national level for this species.

Source: own elaborations.

Quality of the assessment

The MEDITS index showed marked changes over the last three years, largely driven by observations from GSA2 that the model was unable to follow properly. Although a relatively stable a4a model configuration was found, none of the configurations tested produced an acceptable retrospective pattern without introducing excessive smoothing in the recruitment submodel. This led to an underestimation of population numbers at ages 1 and 2, resulting in an overestimation of the recent decline in recruitment. The group concluded that this estimated decline was disproportionate to the observed changes in the index.

To provide catch advice, the group decided to use ICES category 3. After applying ICES decision tree, the advice was given based on method 2.2.

Issues relevant for the advice

No additional relevant issues for the advice.

Reference points

Table 3.15.5. Blue and red shrimp in GSAs 1, 2: Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	0.70	Index trigger value (Itrigger), defined as Itrigger = Iloss × 1.4.	STECF EWG 26-09
	F_{MSY}	1.00	$L_{mean}/L_{F=M}$; Mean catch length divided by MSY proxy reference length ($L_{F=M}$).	STECF EWG 26-09
Precautionary approach	B_{lim}		Not defined	
	B_{pa}		Not Defined	
	B_{MSY}		Not Defined	
	F_{pa}		Not Defined	
Management plan	MSY $B_{trigger}$		Not Defined	
	B_{lim}			
	F_{MSY}		Not Defined	
	target range F_{lower}			
	target range F_{upper}			

Source: own elaborations.

Basis of the assessment

Table 3.15.6. Blue and red shrimp in GSAs 1, 2: Basis of the assessment and advice.

Assessment type	Survey biomass trend applying the chr rule for advice (ICES, 2022)
Input data	Catch time-series (landings and discards from DCF*), biomass time-series data from MEDITS survey, and catch length data from DCF.
Discards, BMS landings*, and bycatch	Discards were negligible and were not included
Indicators	Length-based indicator
Other information	
Working group	STECF EWG 26-09

*DCF: Data Collection Framework.

Source: own elaborations.

History of the advice, catch, and management

Table 3.15.7. Blue and red shrimp in GSAs 1, 2: STECF advice and catches reported to STECF. All weights are in tonnes.

Year	STECF advice	Predicted landings corresponding to advice	Predicted catch corresponding to advice	STECF Catches
2019	F = F_{MSY}	98	98	166
2020	F = F_{MSY}	96	96	164
2024	MSY approach (ICES category 3 method 2.2)		76	199
2025	F = F_{MSY}		154.5	153
2026	MSY approach (ICES category 3 method 2.2)		169.0	
2027	MSY approach (ICES category 3 method 2.2)		108	

Source: own elaborations.

History of the catch and landings

Table 3.15.8. Blue and red shrimp in GSAs 1, 2: History of commercial landings and discards; official reported values are presented by country and GSA 1&2; all weights are in tonnes.

Year	OTB Landings (t) for GSA1	OTB Landings (t) for GSA 2	OTB Discards (t) for GSA1	OTB Discards (t) for GSA 2
2002	157.0	89.8		
2003	335.7	114.4		
2004	225.2	69.3		
2005	232.1	82.2	0.65	
2006	288.8	137.5		
2007	178.4	78.6		
2008	133.5	49.3		
2009	144.6	67.7		2.58
2010	152.1	48.7	0.01	0.57
2011	131.4	47.4	0.14	0.03
2012	148.6	45.0	0.06	0.06
2013	125.0	63.9	0.05	0.03
2014	184.0	41.0	0.01	0.01
2015	170.2	51.9	0.03	0.22
2016	138.2	40.1	0.01	0.29
2017	99.2	48.0	0.01	0.21
2018	123.2	47.5	0.01	0.04
2019	132.1	72.0	0.07	0.07
2020	137.4	31.7	0	0
2021	86.6	48.0	0.03	0.15
2022	107.2	66.5	0.02	0.21
2023	145.0	52.6	0.04	0.07
2024	127.5	71.1	0.19	0.05
2025	99.5	53.3	0	0

Source: MS data submission under the 2026 Mediterranean and Black Sea data call - MARE/D1/CO (2026).

3.16 Summary sheet for Blue and red shrimp in GSA 5

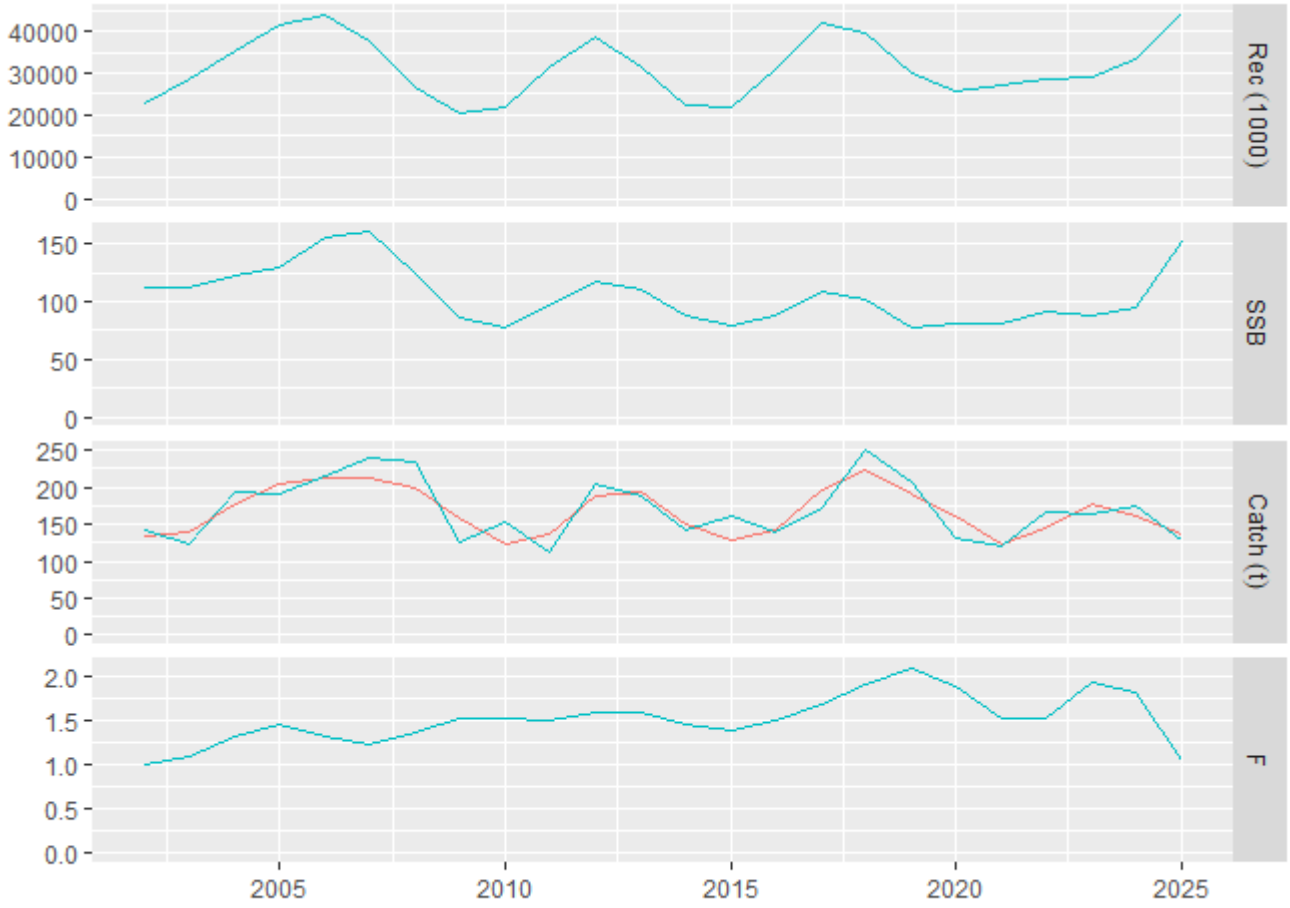
STECF advice on stock status

STECF EWG 26-09 advises that when MSY considerations are applied the fishing mortality in 2027 should be no more than 0.61 and corresponding catches in 2027 should be no more than 125 tons.

Stock development over time

Catches show large fluctuations over the available time series, and are decreasing in the most recent years. SSB is also fluctuating, with a general slow decreasing pattern; however, it is recovering in the last three year. A similar pattern is shown by the recruitment. F has reached its zenith in 2019, and it is decreasing in the last three years.

Figure 3.16.1. Blue and red shrimp in GSA 5: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (Blue lines). The red line represents the reported catches time series.



Source: Own elaborations.

Table 3.16.1. Blue and red shrimp in GSA 5: Assessment summary. Weights are in tonnes. Catches estimated by the model.

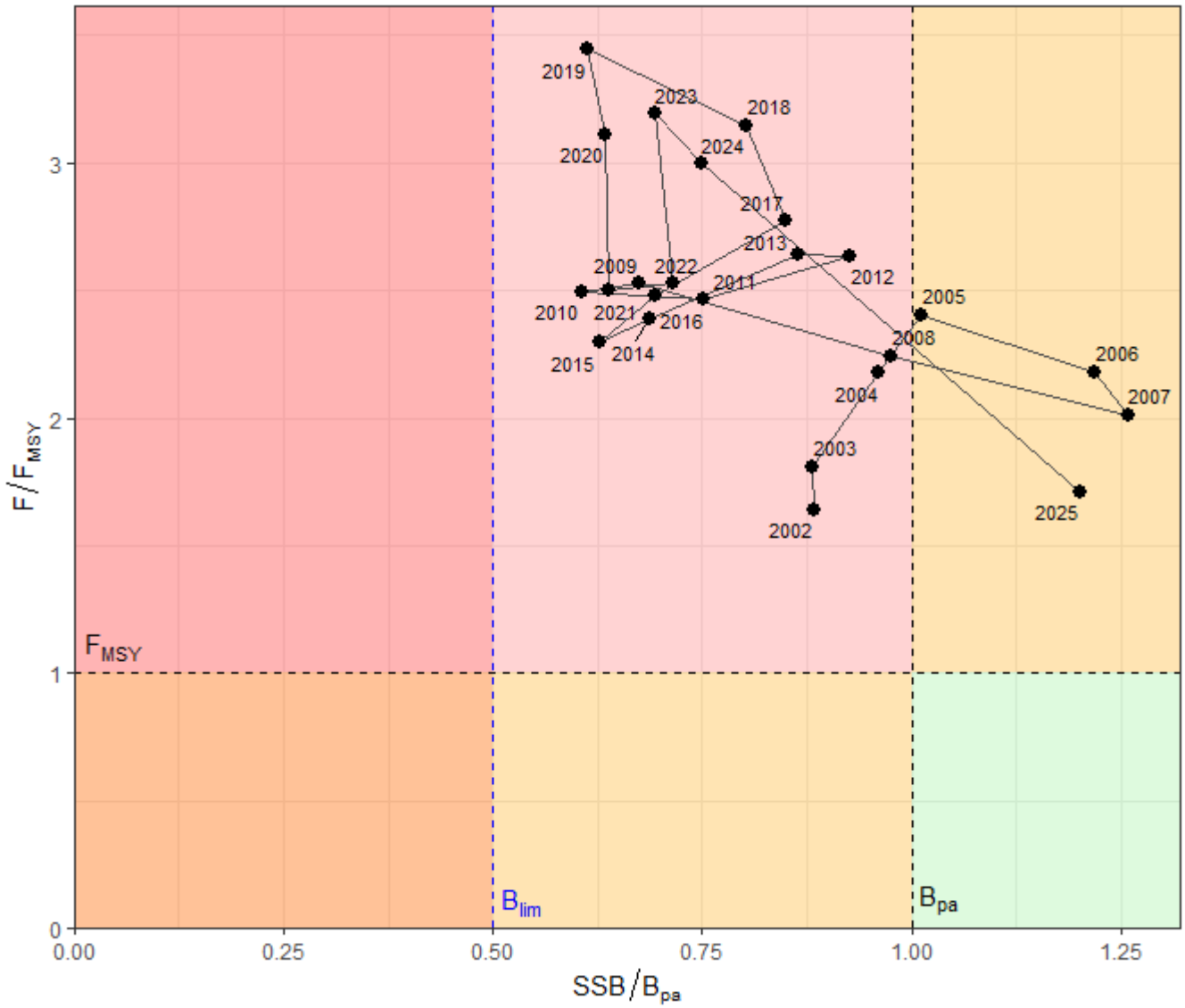
Year	Recruitment (1000s)	SSB (t)	Catch (t)	F(1-3)
2002	22602	113	133	1.00
2003	28777	112	139	1.10
2004	35410	123	178	1.32
2005	41484	129	203	1.46
2006	43869	155	214	1.33
2007	37690	160	211	1.22
2008	26686	124	200	1.36
2009	20300	86	157	1.54
2010	22095	77	122	1.52
2011	31611	96	137	1.50
2012	38590	118	188	1.60
2013	31222	110	194	1.61
2014	22133	88	149	1.45
2015	21835	80	128	1.39
2016	31160	88	142	1.51
2017	42193	108	195	1.68
2018	39560	102	223	1.91
2019	30067	78	191	2.09
2020	25919	81	162	1.89
2021	26985	81	124	1.52
2022	28530	91	145	1.54
2023	29149	88	176	1.94
2024	33161	95	161	1.82
2025	44147	153	137	1.04

Source: Own elaborations.

Stock and exploitation status

The current level of fishing mortality is above the reference point F0.1, used as proxy of FMSY (0.61). SSB in 2025 is above Bpa and below BMSY (F > FMSY, SSB > Blim, and SSB > Bpa).

Figure 3.16.2. Blue and red shrimp in GSA 5: Kobe plot showing the stock trajectory relative to biological reference points (F/FMSY and SSB/Bpa). The blue dashed line indicates SSB/Blim. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below Blim, representing a risk of impaired recruitment.



Source: Own elaborations.

Catch scenarios

Table 3.16.2. Blue and red shrimp in GSA 5: Assumptions made for the interim year and in the forecast.

Variable	Value	Notes
Assumption on biology	3	Number of years in which M, Mat, Mean weight, etc were averaged
Assumption on selectivity	3	Number of years in which selectivity was averaged
Fages 1-3 (2026)	1.04	Fsq = F in the last year
SSB (2026)	161.5	SSB intermediate year from STF output
Rage1 (2026)	30499.3	Recruitment will be set as geometric mean of the last 20 years
Rage1 (2027)	30499.3	Recruitment will be set as geometric mean of the last 20 years
Total Catch (2026)	192.4	Catch intermediate year from STF output

Table 3.16.3. Blue and red shrimp in GSA 5: Annual catch scenarios. All weights are in tonnes.

Basis	Total catch (2027)	F_{total} (ages 1-3) (2027)	SSB** (2028)	% SSB change^	% Catch change^^
STECF advice basis					
F_{MSY} / MAP	125.4	0.61	207.1	+28.3	-8.4
Other scenarios					
$F_{MSY\ lower}$	91.0	0.40	249.4	+54.4	-33.6
$F_{MSY\ upper}$*	156.4	0.83	173.2	+7.2	+14.2
Zero catch	0.0	0.00	383.8	+137.7	-100.0
Status quo	181.3	1.04	148.8	-7.8	+32.4

* $F_{MSY\ upper}$ is not tested and is assumed not to be precautionary STECF does not advise fishing at F > F_{MSY}.

** SSB in the middle of the year.

^ % change in SSB 2028 to 2026.

^^ Total catch in 2027 relative to catch in 2025.

Source: Own elaborations.

Basis of the advice

Table 3.16.4. Blue and red shrimp in GSA 5: The basis of the advice.

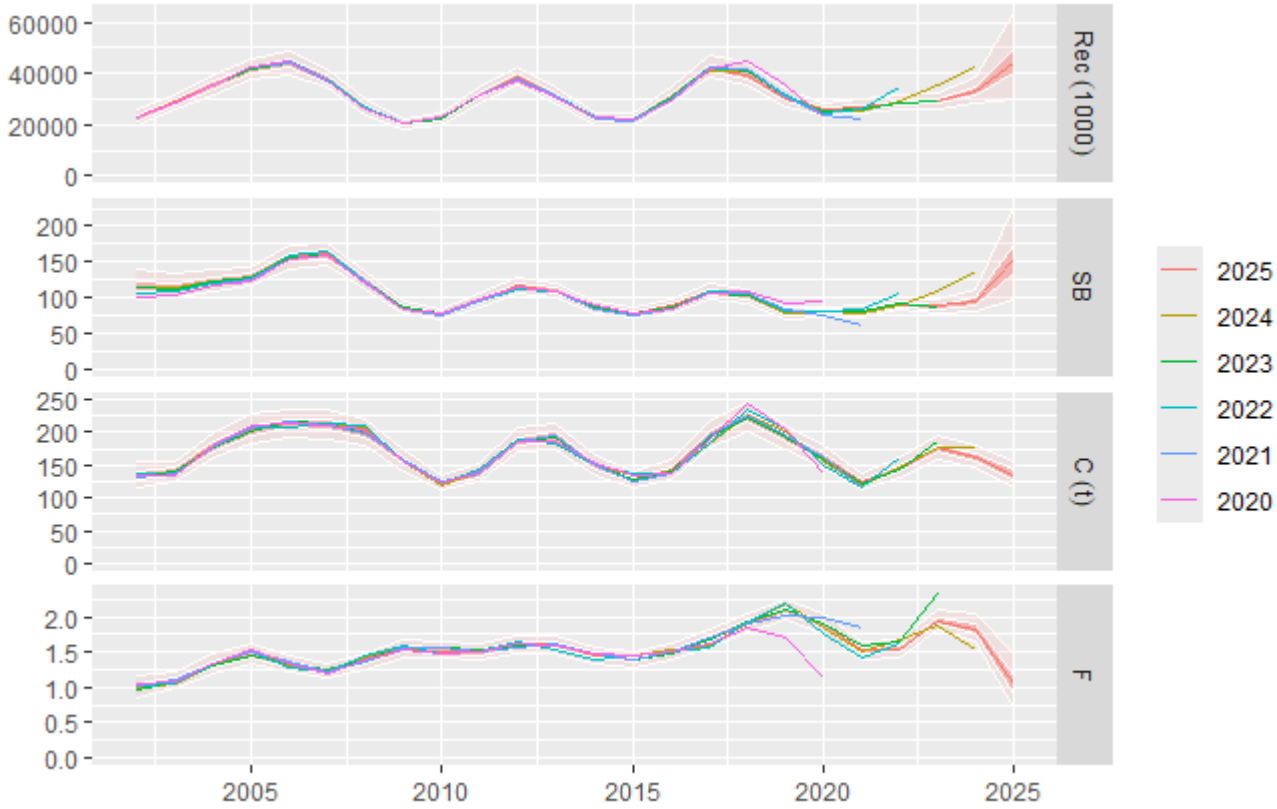
Advice basis	Western Mediterranean multiannual plan
Management plan	An EU Western Mediterranean multiannual plan (MAP) has been agreed by the EU for this stock (EU, 2019).

Source: Own elaborations.

Quality of the assessment

A new assessment model was used, as no validated assessment was achieved last year by the EWG 25-09.

Figure 3.16.3. Blue and red shrimp in GSA 5: retrospective analysis.



Source: Own elaborations.

Issues relevant for the advice

Changed assessment model as outlined above.

Reference points

Table 3.16.5. Blue and red shrimp in GSA 5: Reference points, values, and their technical basis, they were estimated in EWG26-09 as the assessment model had changed.

Framework	Reference point	Value	Technical basis	Source
MSY approach	FMSY	0.61	F0.1 as proxy for FMSY	STECF EWG 26-09
Precautionary approach	Blim	64	Default based on 25% BF0.1 and GM recruitment	STECF EWG 26-09
Precautionary approach	Bpa	128	Blim * 2	STECF EWG 26-09
Precautionary approach	BMSY	255	BF0.1	STECF EWG 26-09
Precautionary approach	Fpa		Not Defined	

Source: Own elaborations.

Basis of the assessment

Table 3.16.6. Blue and red shrimp in GSA 5: Basis of the assessment and advice.

Assessment type	Statistical catch at age
Input data	DCF commercial data (landings and discards) and scientific survey (MEDITS) data
Discards, BMS landings*, and bycatch	Discards included
Indicators	
Other information	
Working group	STECF EWG 26-09

*BMS (Below Minimum Size) landings

Source: Own elaborations.

History of the advice, catch, and management

Table 3.16.7. Blue and red shrimp in GSA 5: STECF advice and STECF estimates of catches reported to STECF. All weights are in tonnes.

Year	STECF advice	Predicted landings corresponding to advice	Predicted catch corresponding to advice	STECF Catches
2025	F = FMSY			128
2026	F = FMSY		192.4	
2027	F = FMSY		125.4	

Source: Own elaborations.

History of the catch and landings

Table 3.16.8. Blue and red shrimp in GSA 5: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes.

year	Bottom otter trawl GSA 5 ESP
2002	141
2003	122
2004	194
2005	191
2006	214
2007	239
2008	233
2009	126
2010	153
2011	112
2012	204
2013	189
2014	142
2015	160
2016	138
2017	171
2018	250
2019	206
2020	131
2021	121
2022	167
2023	163
2024	174
2025	128

Source: MS data submission under the 2026 Mediterranean and Black Sea data call - MARE/D1/CO (2026).

Partial Fishing Mortality by fleet and GSA

Table 3.16.9. Blue and red shrimp in GSA 5: Partial Fishing Mortality by country, gear and GSA (average over 3 most recent years).

age	Bottom otter trawl GSA 5 ESP
1	0.55
2	1.65
3	2.60
4	1.30
5+	0.02

Source: Own elaborations.

3.17 Summary sheet for Blue and red shrimp in GSAs 6, 7

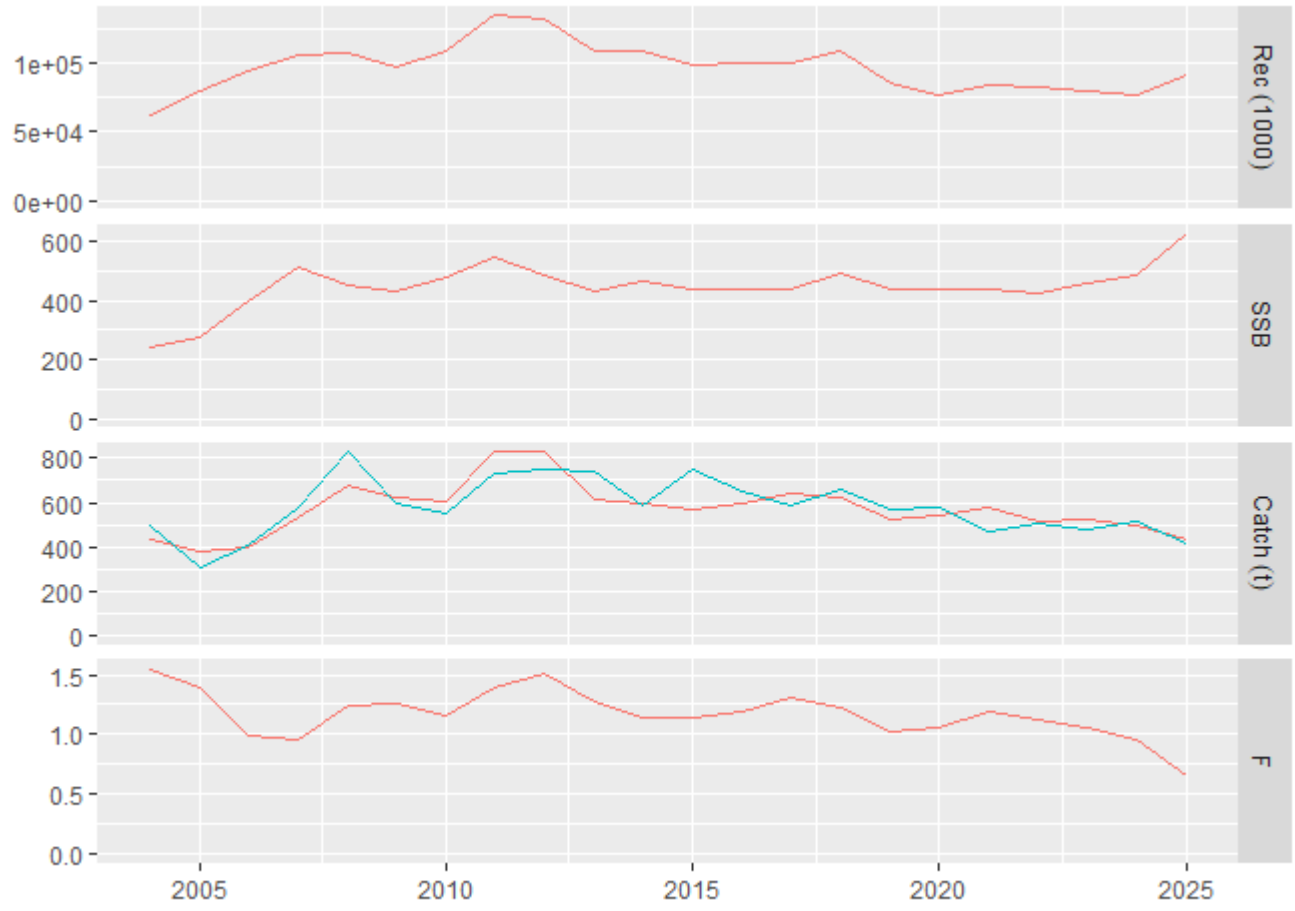
STECF advice on stock status

STECF EWG 26-09 advises that when MSY considerations are applied the fishing mortality in 2027 should be no more than 0.54 and corresponding catches in 2027 should be no more than 529 tons.

Stock development over time

Catches peaked significantly between 2010 and 2015, followed by a declining trend in subsequent years. The spawning stock biomass (SSB) of blue and red shrimp fluctuated, showing an upward trend over the last five years. In contrast, fishing mortality (F) fluctuated before declining over the same period.

Figure 3.17.1. Blue and red shrimp in GSAs 6, 7: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (red lines). The blue line represents the reported catches time series.



Source: Own elaborations.

Table 3.17.1. Blue and red shrimp in GSAs 6, 7: Assessment summary. Weights are in tonnes. Catches estimated by the model.

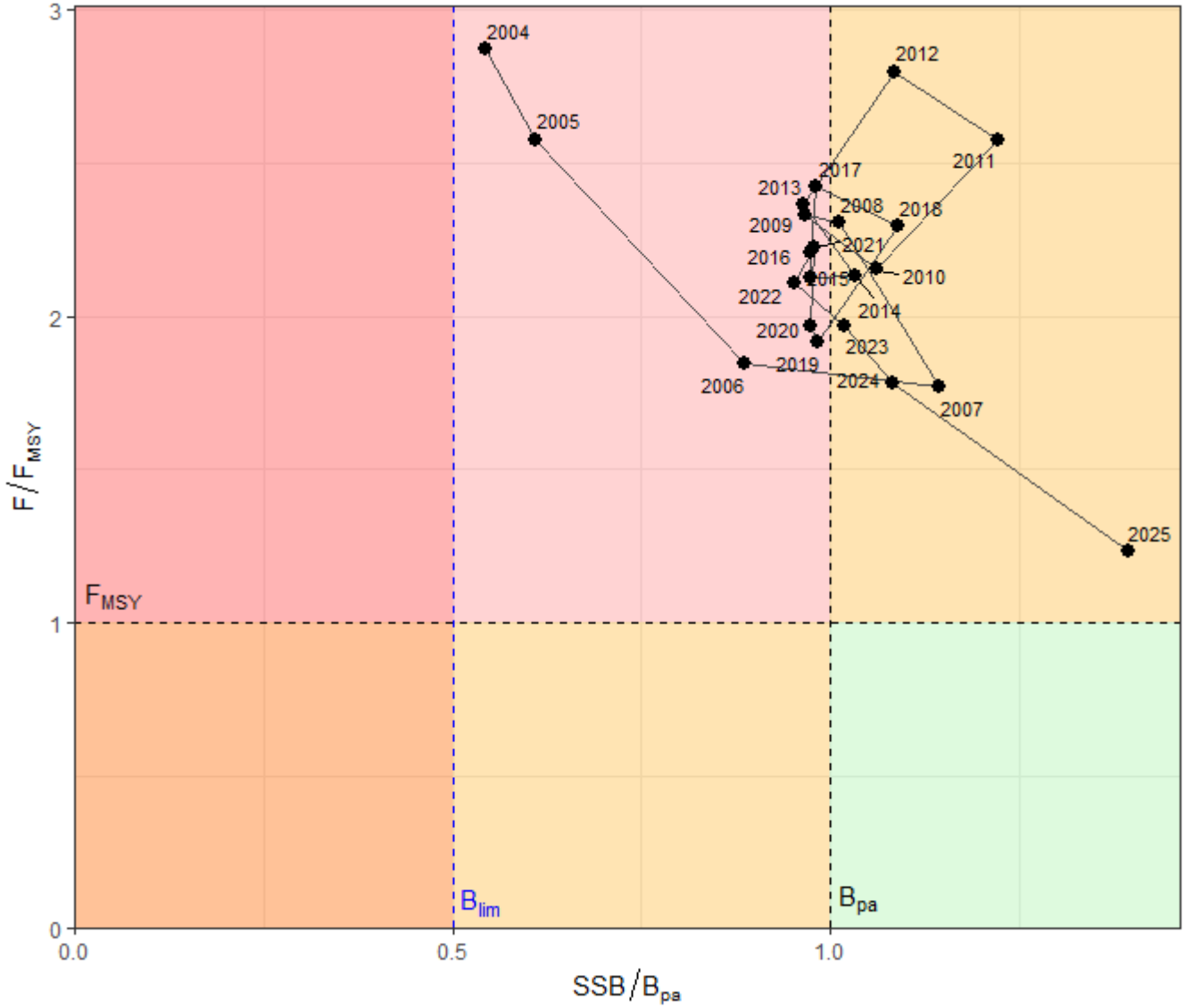
Year	Recruitment (1000s)	SSB (t)	Catch (t)	F(1-2)
2004	61497	245	437	1.54
2005	79514	274	385	1.38
2006	94030	399	401	0.99
2007	105288	514	533	0.95
2008	107517	455	677	1.24
2009	96948	435	626	1.25
2010	108993	477	607	1.16
2011	133841	550	829	1.38
2012	131156	488	826	1.50
2013	108709	434	615	1.27
2014	108750	465	599	1.15
2015	97963	438	573	1.14
2016	99249	438	595	1.19
2017	99804	441	640	1.30
2018	108921	490	626	1.23
2019	85714	442	521	1.03
2020	76586	438	546	1.06
2021	84257	440	575	1.20
2022	82725	428	518	1.13
2023	79662	459	521	1.06
2024	76792	486	497	0.96
2025	91349	627	434	0.66

Source: Own elaborations.

Stock and exploitation status

The current level of fishing mortality is above the reference point F0.1, used as proxy of FMSY (0.54). SSB in 2025 is above Bpa and below BMSY (F > FMSY, SSB > Blim, and SSB > Bpa).

Figure 3.17.2. Blue and red shrimp in GSAs 6, 7: Kobe plot showing the stock trajectory relative to biological reference points (F/FMSY and SSB/Bpa). The blue dashed line indicates SSB/Blim. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below Blim, representing a risk of impaired recruitment.



Source: Own elaborations.

Catch scenarios

Table 3.17.2. Blue and red shrimp in GSAs 6, 7: Assumptions made for the interim year and in the forecast.

Variable	Value	Notes
Assumption on biology	3	Number of years in which maturity, natural mortality and mean weights were averaged
Assumption on selectivity	3	Number of years in which selectivity was averaged
Fages 1-2 (2026)	0.66	Fsq = F in the last year
SSB (2026)	739	SSB intermediate year from STF output
Rage1 (2026)	95221	Stock recruitment relationship
Rage1 (2027)	95221	Stock recruitment relationship
Total Catch (2026)	560	Catch intermediate year from STF output

Source: Own elaborations.

Table 3.17.3. Blue and red shrimp in GSAs 6, 7: Annual catch scenarios. All weights are in tonnes.

Basis	Total catch (2027)	Ftotal (ages 1-2) (2027)	SSB** (2028)	% SSB change^	% Catch change^^
STECF advice basis					
FMSY / MAP	529	0.54	906	+22.59	+21.79
Other scenarios					
FMSY lower	389	0.36	1097	+48.52	-10.53
FMSY upper*	653	0.73	756	+2.25	+50.35
Zero catch	0	0.00	1744	+136.00	-100.00
Status quo	612	0.66	803	+8.72	+40.89

** FMSY upper is not tested and is assumed not to be precautionary. STECF does not advise fishing at F > FMSY.*

*** SSB in the middle of the year.*

^ % change in SSB 2028 to 2026.

^^ Total catch in 2027 relative to catch in 2025.

Source: Own elaborations.

Basis of the advice

Table 3.17.4. Blue and red shrimp in GSAs 6, 7: The basis of the advice.

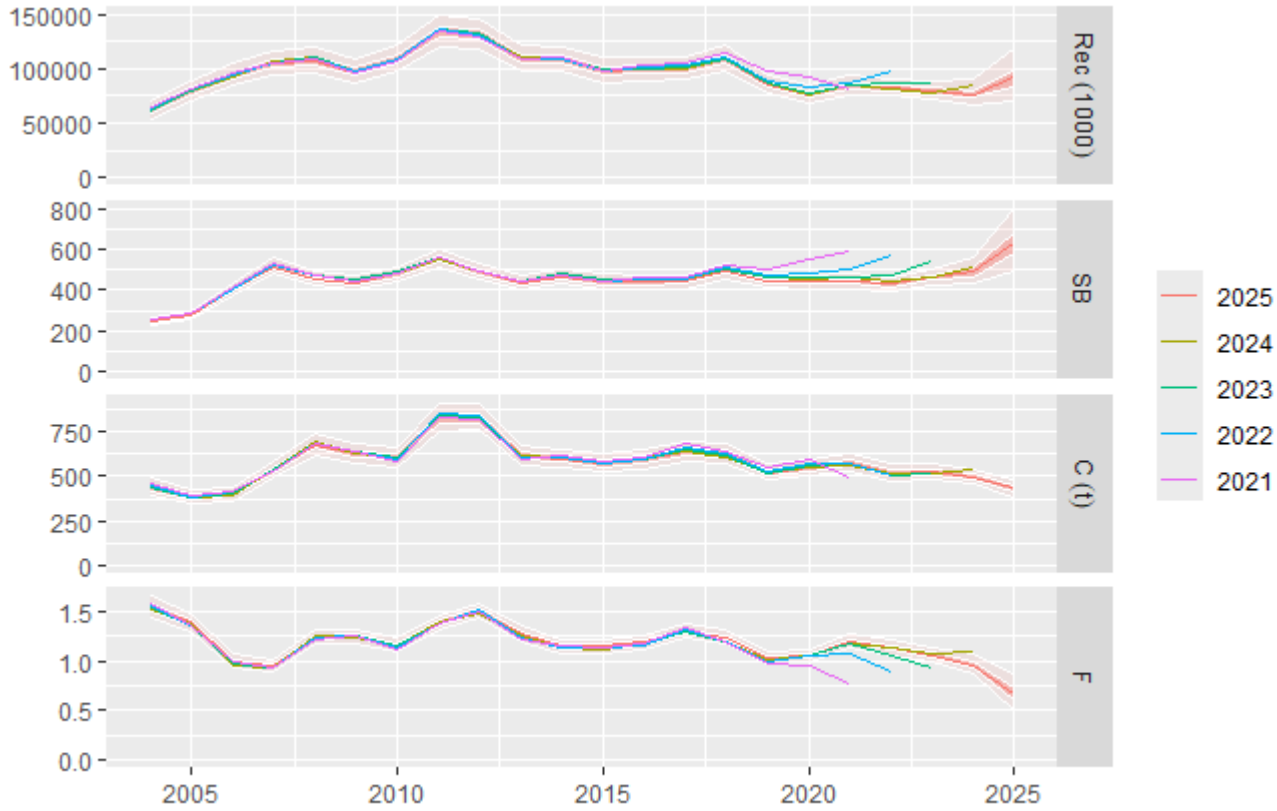
Advice basis	Western Mediterranean multiannual plan
Management plan	An EU Western Mediterranean multiannual plan (MAP) has been agreed by the EU for this stock (EU, 2019).

Source: Own elaborations.

Quality of the assessment

New sex-separated input data were implemented; consequently, a new assessment model was tested and approved. Due to incompatibility during the years 2002 and 2003 between landings reported in Catalonia (which produces around 70% of the total landings in GSAs 6 and 7) and those reported in the DCF (GSA 6), and also the mean weights out of trend reported for those same years, the assessment was carried out with data from 2004 to 2025. Discards were directly added to the catch data. No length reconstruction was performed, as the length-frequency distributions for the OTB fleet remained consistent throughout the time series. All the diagnostics were considered acceptable.

Figure 3.17.3. Blue and red shrimp in GSAs 6, 7: retrospective analysis.



Source: Own elaborations.

Issues relevant for the advice

The input objects and assessment model were updated as outlined above. No new reference points were introduced, as the existing values fall well within the distribution range of newly estimated ones.

Reference points

Table 3.17.5. Blue and red shrimp in GSAs 6, 7: Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY Btrigger		Not Defined	
MSY approach	FMSY	0.54	F0.1 as proxy for FMSY	STECF EWG 25-09
Precautionary approach	Blim	225	Segreg SR; Blim as 0.25 BMSY	STECF EWG 25-09
Precautionary approach	Bpa	450	Blim * 2	STECF EWG 25-09
Precautionary approach	BMSY	1020	BF0.1	STECF EWG 25-09
Precautionary approach	Fpa		Not Defined	
Management plan	Blim		Not Defined	
Management plan	FMSY	0.54	F0.1 as proxy for FMSY	STECF EWG 25-09

Source: Own elaborations.

Basis of the assessment

Table 3.17.6. Blue and red shrimp in GSAs 6, 7: Basis of the assessment and advice**.**

Assessment type	Statistical catch at age
Input data	DCF commercial data (landings and discards) and scientific survey (MEDITS) data
Discards, BMS landings*, and bycatch	Discards included
Indicators	
Other information	
Working group	STECF EWG 26 -09

*BMS (Below Minimum Size) landings

Source: Own elaborations.

History of the advice, catch, and management

Table 3.17.7. Blue and red shrimp in GSAs 6, 7: STECF advice and catches reported to STECF. All weights are in tonnes.

Year	STECF advice	Predicted landings corresponding to advice	Predicted catch corresponding to advice	STECF catches
2019	F = FMSY		821.0	942.1
2020	F = FMSY		521	599.0
2021	F = FMSY		667.6	853.4
2022	F = FMSY		1033	712.7
2023	F = FMSY		861.9	796
2024	F = FMSY		976	688
2025	F = FMSY		743	434
2026	F = FMSY		652	
2027	F = FMSY		529	

Source: Own elaborations.

History of the catch and landings

Table 3.17.8. Blue and red shrimp in GSAs 6, 7: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes.

year	Bottom otter trawl GSA 6 ESP	Bottom otter trawl GSA 7 ESP	Bottom otter trawl GSA 7 FRA
2004	448	51	0
2005	294	12	0
2006	396	16	0
2007	527	48	0
2008	737	92	0
2009	515	85	0
2010	509	39	0
2011	669	65	0
2012	718	33	0
2013	691	52	0
2014	546	45	0
2015	690	61	0
2016	574	76	0
2017	529	58	0
2018	606	50	0
2019	550	24	0
2020	543	35	0
2021	435	32	0
2022	481	27	0
2023	457	27	0
2024	484	31	0
2025	391	22	0

Source: MS data submission under the 2026 Mediterranean and Black Sea data call - MARE/D1/CO (2026).

Partial Fishing Mortality by fleet and GSA

Table 3.17.9. Blue and red shrimp in GSAs 6, 7: Partial Fishing Mortality by country, gear and GSA (average over 3 most recent years).

age	Bottom otter trawl GSA 6 ESP	Bottom otter trawl GSA 7 ESP
1	0.36	0.01
2	1.34	0.09
3	1.54	0.19
4	1.02	0.02
5	0.09	0.01

Source: Own elaborations.

3.18 Summary sheet for Blue and red shrimp in GSA 8, 9, 10, 11

STECF advice on stock status

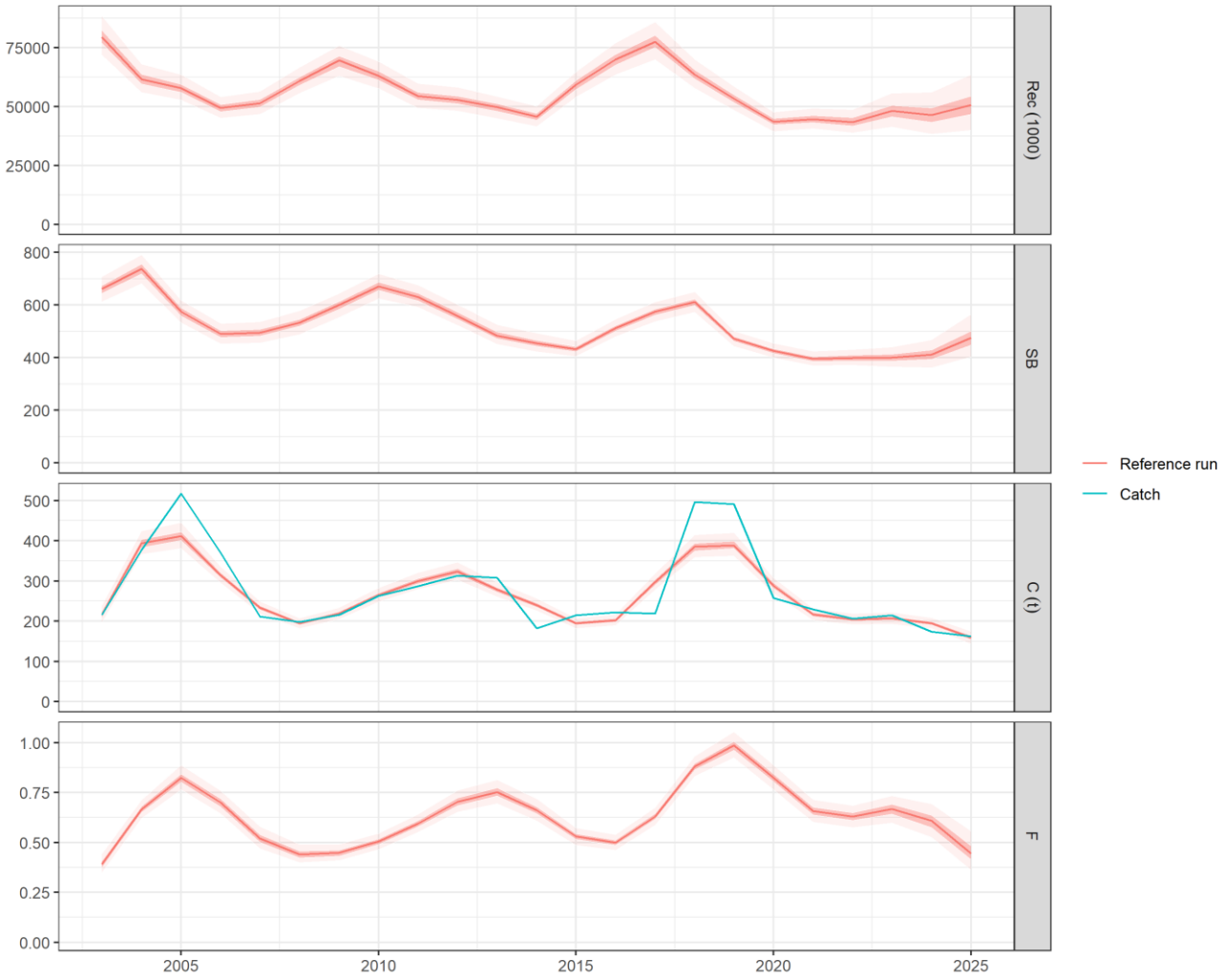
STECF EWG 26-09 advises that when MSY considerations are applied the fishing mortality in 2027 should be no more than 0.40 and corresponding catches in 2027 should be no more than 184 tons.

Stock development over time

Catches exhibited three distinct peaks in 2005, 2018, and 2019, followed by a declining trend in recent years.

SSB of blue and red shrimp shows fluctuations, with an increasing trend over the last two years. In contrast, F displayed a fluctuating pattern, followed by a decline over the same period.

Figure 3.18.1. Blue and red shrimp in GSA 8, 9, 10, 11: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (Blue lines). The red line represents the reported catches time series.



Source: Own elaborations.

Table 3.18.1. Blue and red shrimp in GSA 8, 9, 10, 11: Assessment summary. Weights are in tonnes. Catches estimated by the model.

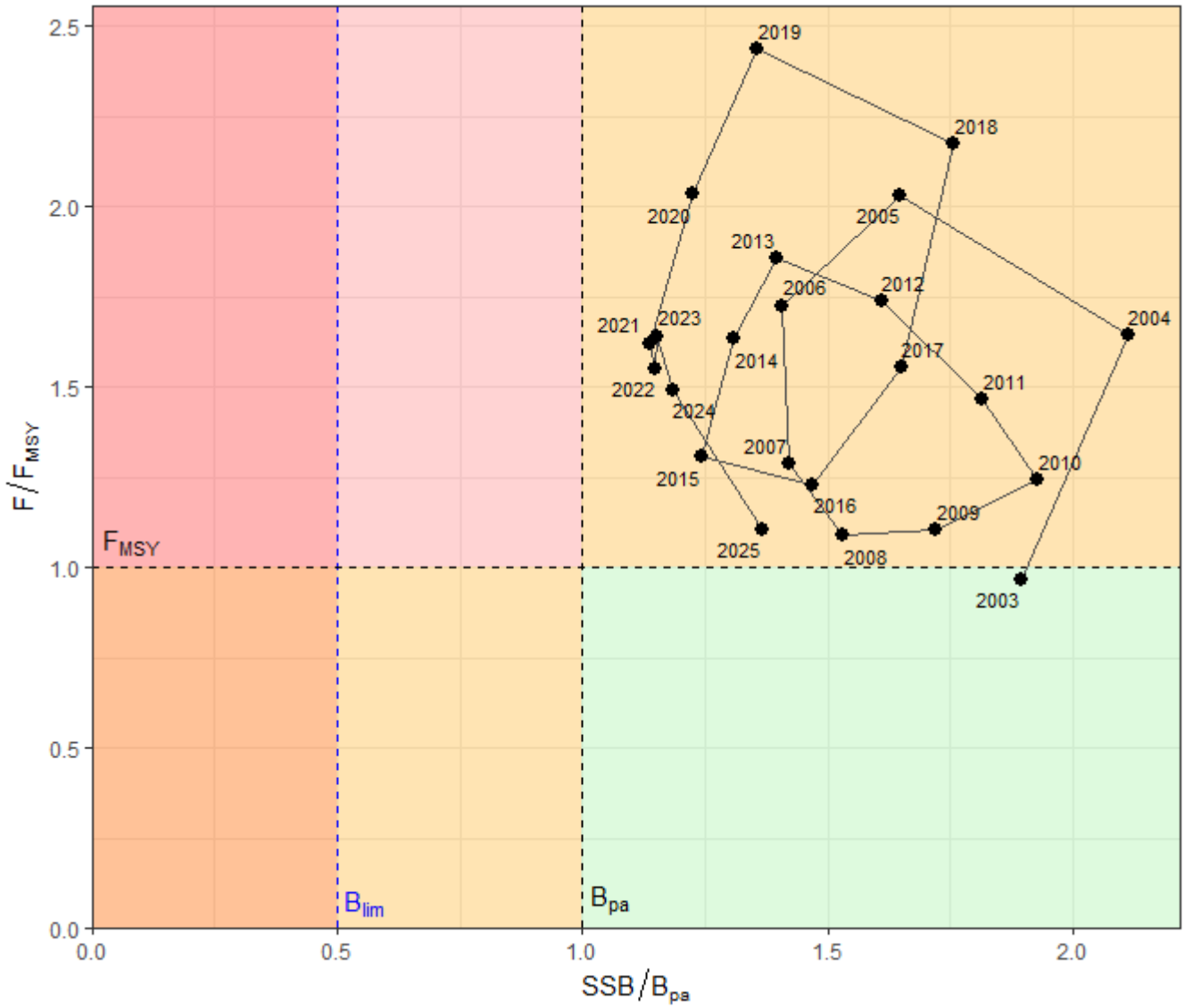
Year	Recruitment (1000s)	SSB (t)	Catch (t)	F(2-5)
2003	79680	657	216	0.39
2004	61651	734	394	0.67
2005	57718	572	412	0.82
2006	49328	489	314	0.70
2007	51356	493	234	0.52
2008	60823	532	195	0.44
2009	69231	597	219	0.45
2010	63047	669	265	0.50
2011	54399	630	299	0.59
2012	52852	559	324	0.70
2013	49542	484	278	0.75
2014	45635	454	240	0.66
2015	59128	432	195	0.53
2016	69973	510	203	0.50
2017	77587	572	297	0.63
2018	63599	610	385	0.88
2019	53298	470	389	0.99
2020	43522	425	288	0.82
2021	44684	395	217	0.66
2022	43445	399	205	0.63
2023	48057	400	207	0.67
2024	46285	411	195	0.61
2025	50451	474	159	0.45

Source: Own elaborations.

Stock and exploitation status

The current level of fishing mortality is slightly above the reference point F0.1, used as proxy of FMSY (0.40). SSB in 2025 is above Bpa and below BMSY (F > FMSY, SSB > Blim, and SSB > Bpa).

Figure 3.18.2. Blue and red shrimp in GSA 8, 9, 10, 11: Kobe plot showing the stock trajectory relative to biological reference points (F/FMSY and SSB/Bpa). The blue dashed line indicates SSB/Blim. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below Blim, representing a risk of impaired recruitment.



Source: Own elaborations.

Catch scenarios

Table 3.18.2. Blue and red shrimp in GSA 8, 9, 10, 11: Assumptions made for the interim year and in the forecast.

Variable	Value	Notes
Assumption on biology	3	Number of years in which maturity, natural mortality and mean weights were averaged
Assumption on selectivity	3	Number of years in which selectivity was averaged
Fages 2-5 (2026)	0.45	Fsq = F in the last year
SSB (2026)	522	SSB intermediate year from STF output
Rage1 (2026)	54039	Geometric mean of the last 20 years
Rage1 (2027)	54039	Geometric mean of the last 20 years
Total Catch (2026)	182	Catch intermediate year from STF output

Source: Own elaborations.

Table 3.18.3. Blue and red shrimp in GSA 8, 9, 10, 11: Annual catch scenarios. All weights are in tonnes.

Basis	Total catch (2027)	Ftotal (ages 2-5) (2027)	SSB** (2028)	% SSB change^	% Catch change^^
STECF advice basis					
FMSY / MAP	184	0.40	628	+20.22	+15.98
Other scenarios					
Zero catch	0	0.00	943	+80.56	-100.00
Status quo	200	0.45	604	+15.61	+26.04

*** SSB in the middle of the year.*

^ % change in SSB 2028 to 2026.

^^ Total catch in 2027 relative to catch in 2025.

Source: Own elaborations.

Basis of the advice

Table 3.18.4. Blue and red shrimp in GSA 8, 9, 10, 11: The basis of the advice.

Advice basis	Western Mediterranean multiannual plan
Management plan	An EU Western Mediterranean multiannual plan (MAP) has been agreed by the EU for this stock (EU, 2019).

Source: Own elaborations.

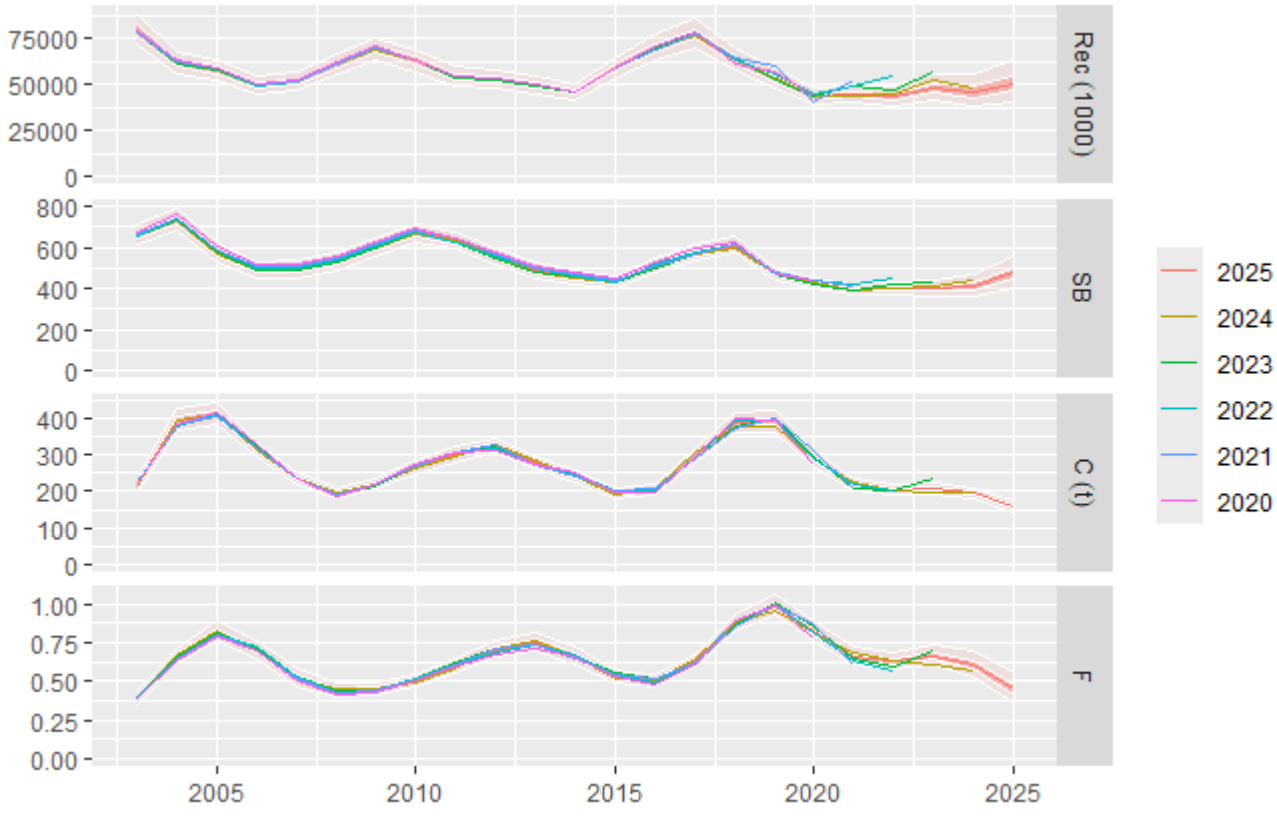
Quality of the assessment

A new assessment model was used, as the update of the previous model lead to retrospective patterns deemed unacceptable. A length-frequency reconstruction was applied to fill gaps in the annual and quarterly observations. This was necessary due to the sparsity and, particularly for GSA 10, the absence or inconsistency of the available length-frequency distributions. Although the diagnostics were considered acceptable overall, the reconstruction procedure may have affected the model results.

Several model configurations were tested to improve the diagnostics. The parameter k for age in the fishing submodel was progressively increased. A value of k = 5 in the fishing submodel was ultimately selected as the best compromise, although an increasing pattern in the residuals for age 6 remained.

The predictive performance of the model was evaluated through a hindcast analysis, which indicated a systematic overestimation of biomass.

Figure 3.18.3. Blue and red shrimp in GSA 8, 9, 10, 11: retrospective analysis.



Source: Own elaborations.

Issues relevant for the advice

A new quantitative model was proposed. F0.1 was used as a proxy for Fmsy, and a geometric mean stock recruitment model was used to compute the reference points.

Reference points

Table 3.18.5. Blue and red shrimp in GSA 8, 9, 10, 11: Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	FMSY	0.40	F0.1 as proxy for FMSY	STECF EWG 26-09
Precautionary approach	Blim	174	Default based on 25% BF0.1 and GM recruitment	STECF EWG 26-09
Precautionary approach	Bpa	347	Blim * 2	STECF EWG 26-09
Precautionary approach	BMSY	694	BF0.1	STECF EWG 26-09
Precautionary approach	Fpa		Not Defined	
Management plan	Blim		Not Defined	
Management plan	FMSY	0.40	F0.1 as proxy for FMSY	STECF EWG 26-09

Source: Own elaborations.

Basis of the assessment

Table 3.18.6. Blue and red shrimp in GSA 8, 9, 10, 11: Basis of the assessment and advice.

Table 3.18.6. Blue and red shrimp in GSA 8, 9, 10, 11: Basis of the assessment and advice.

Assessment type	Statistical catch at age
Input data	DCF commercial data (landings and discards) and scientific survey (MEDITS) data
Discards, BMS landings*, and bycatch	Discards included
Indicators	
Other information	
Working group	STECF EWG 26-09

*BMS (Below Minimum Size) landings

Source: Own elaborations.

History of the advice, catch, and management

Table 3.18.7. Blue and red shrimp in GSA 8, 9, 10, 11: STECF advice and catches reported to STECF. All weights are in tonnes.

Year	STECF advice	Predicted landings corresponding to advice	Predicted catch corresponding to advice	STECF Catches
2021	F = FMSY		61	230
2022	F = FMSY		145	207
2023	F = FMSY		127	215
2024	F = FMSY		172	174
2025	F = FMSY		172	162
2026	F = FMSY		182	
2027	F = FMSY		184	

Source: Own elaborations.

History of the catch and landings

Table 3.18.8. Blue and red shrimp in GSA 8, 9, 10, 11: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes.

year	Bottom otter trawl GSA 10 ITA	Bottom otter trawl GSA 11 ITA	Bottom otter trawl GSA 9 ITA	Trammel nets GSA 10 ITA	Gillnets GSA 10 ITA	Gillnets GSA 9 ITA	Bottom otter trawl GSA 8 FRA	Other GSA 10 ITA	Bottom otter trawl GSA 8 ITA
2003	17	120	77	2	0	0	0	0	0
2004	120	174	82	0	0	0	0	0	0
2005	62	299	154	0	2	0	0	0	0
2006	52	225	93	0	0	0	0	0	0
2007	39	125	47	0	0	0	0	0	0
2008	23	112	63	0	0	0	0	0	0
2009	27	65	123	0	0	0	0	0	0
2010	20	53	186	0	0	0	4	0	0
2011	47	59	175	0	1	0	4	0	0
2012	30	90	193	0	2	0	0	0	0
2013	34	103	170	0	0	0	0	0	0
2014	7	90	84	0	0	0	0	1	0
2015	62	58	91	0	0	0	0	5	0
2016	66	89	67	0	0	0	0	0	0
2017	79	110	62	0	0	0	0	0	0
2018	135	285	77	0	0	0	0	0	0
2019	141	193	90	0	0	0	0	0	26
2020	69	126	49	0	0	0	0	0	0
2021	84	80	65	0	0	0	0	0	0
2022	74	58	72	0	0	0	3	0	0
2023	67	47	96	0	0	0	5	0	0
2024	58	45	61	0	0	0	9	0	1
2025	57	47	53	0	0	0	5	0	0

Source: MS data submission under the 2026 Mediterranean and Black Sea data call - MARE/D1/CO (2026).

Partial Fishing Mortality by fleet and GSA

Table 3.18.9. Blue and red shrimp in GSA 8, 9, 10, 11. Partial Fishing Mortality by country, gear and GSA (average over 3 most recent years).

age	Bottom otter trawl GSA 8 ITA	Bottom otter trawl GSA 8 FRA	Bottom otter trawl GSA 9 ITA	Bottom otter trawl GSA 10 ITA	Bottom otter trawl GSA 11 ITA
1	0.000	0.000	0.008	0.007	0.015
2	0.000	0.008	0.080	0.089	0.081
3	0.001	0.020	0.175	0.215	0.145
4	0.002	0.028	0.336	0.148	0.165
5	0.003	0.038	0.468	0.187	0.090
6+	0.003	0.040	0.436	0.039	0.022

Source: Own elaborations.

3.19 Summary sheet for Giant red shrimp in GSA 8, 9, 10, 11

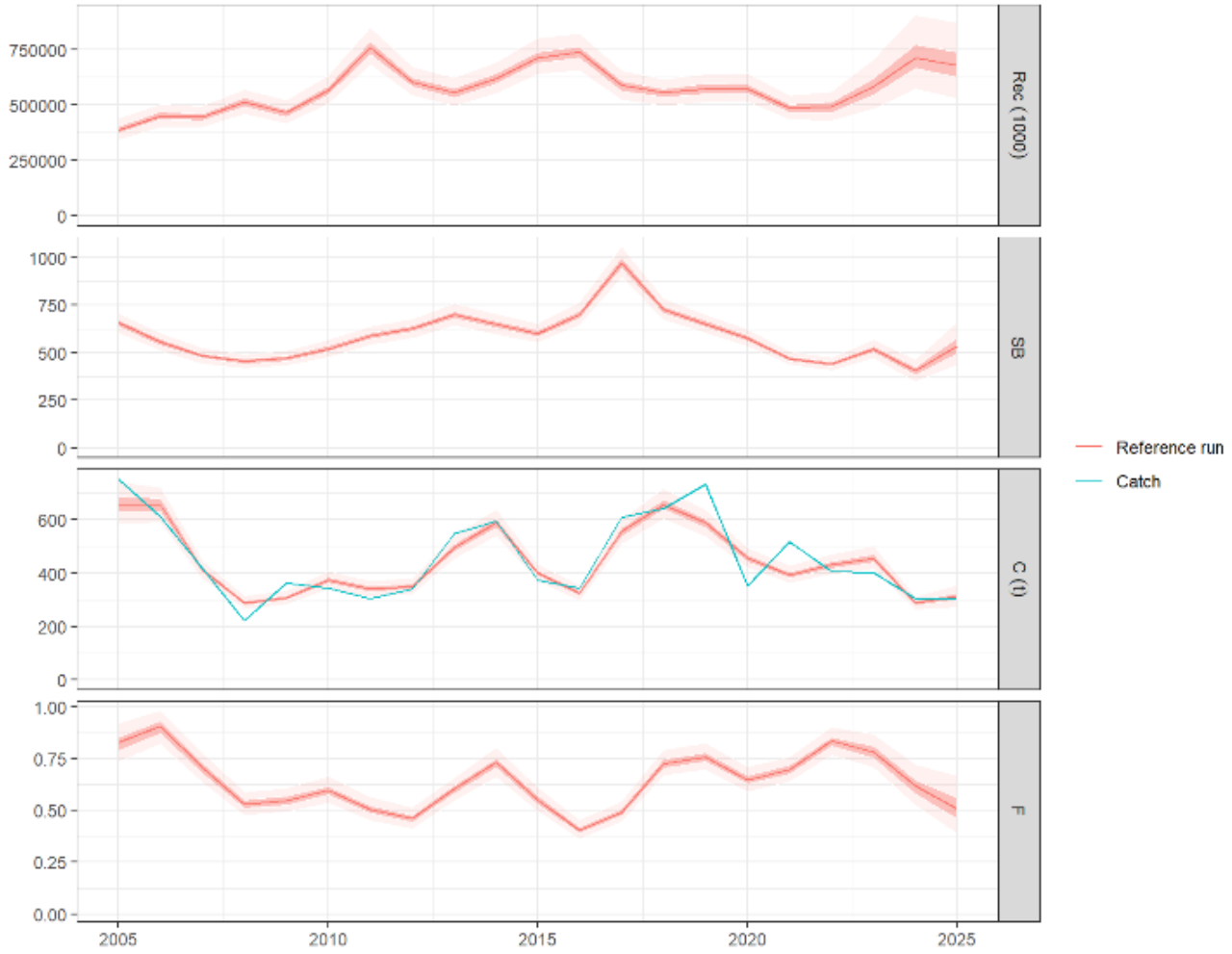
STECF advice on stock status

STECF EWG 26-09 advises that advises that when MSY considerations are applied the fishing mortality in 2026 should be no more than 0.49 and corresponding catches in 2026 should be no more than 414 tons.

Stock development over time

The assessment of the giant red shrimp in GSAs 8, 9, 10, 11 show a fluctuating pattern of the catches with broadly constant values in the last two years. Recruitment has been increasing since 2021 while SSB is quite constant since 2021, showing also a slight increase in the last year. Fishing mortality (Fbar 1-3) is gradually decreasing since 2022. Fbar in 2025 is 0.51.

Figure 3.19.1. Giant red shrimp in GSA 8, 9, 10, 11: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (red lines). The blue line represents the reported catches time series.



Source: Own elaborations.

Table 3.19.1. Giant red shrimp in GSA 8, 9, 10, 11: Assessment summary. Weights are in tonnes.

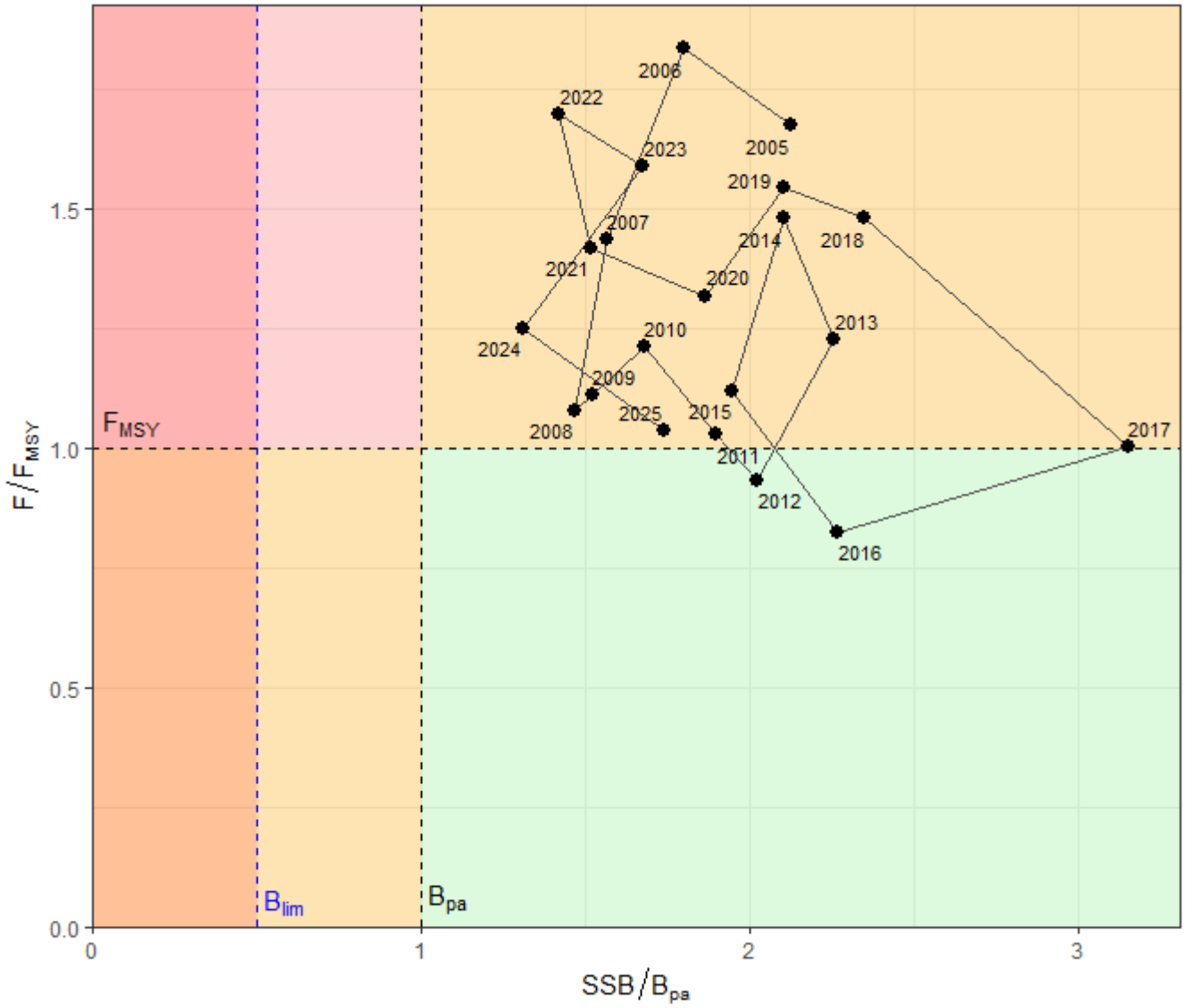
Year	Recruitment (1000s)	SSB (t)	Catch (t)	F(1-3)
2005	388412	657	659	0.82
2006	451315	556	652	0.90
2007	447007	483	413	0.71
2008	510354	453	290	0.53
2009	464122	470	307	0.55
2010	565226	519	373	0.60
2011	754734	586	340	0.51
2012	603339	625	351	0.46
2013	557872	696	496	0.60
2014	618339	649	589	0.73
2015	712038	602	400	0.55
2016	740410	700	324	0.41
2017	586415	973	554	0.49
2018	553262	726	657	0.73
2019	570752	649	586	0.76
2020	571363	576	456	0.65
2021	482256	468	394	0.70
2022	491832	438	430	0.83
2023	582002	517	456	0.78
2024	720096	404	288	0.61
2025	679679	537	313	0.51

Source: Own elaborations.

Stock and exploitation status

The stock status in 2025 relative to the reference points is: F > FMSY, SSB > Blim, and SSB > Bpa.

Figure 3.19.2. Giant red shrimp in GSA 8, 9, 10, 11: Kobe plot showing the stock trajectory relative to biological reference points (F/FMSY and SSB/Bpa). The blue dashed line indicates SSB/Blim. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below Blim, representing a risk of impaired recruitment.



Source: Own elaborations.

Catch scenarios

Table 3.19.2. Giant red shrimp in GSA 8, 9, 10, 11: Assumptions made for the interim year and in the forecast.

Variable	Value	Notes
Assumption on biology	3	Number of years in which maturity, natural mortality and mean weights were averaged
Assumption on selectivity	3	Number of years in which selectivity was averaged
Fages 1-3 (2026)	0.51	Fsq = F in the last year
SSB (2026)	705	SSB intermediate year from STF output
Rage0 (2026)	565006	Geometric mean of the last 21 years
Rage0 (2027)	565006	Geometric mean of the last 21 years
Total Catch (2026)	415	Catch intermediate year from STF output

Source: Own elaborations.

Table 3.19.3. Giant red shrimp in GSA 8, 9, 10, 11: Annual catch scenarios. All weights are in tonnes.

Basis	Total catch (2027)	Ftotal (ages 1-3) (2027)	SSB** (2028)	% SSB change^	% Catch change^^
STECF advice basis					
FMSY / MAP	419	0.49	646	-8.38	+35.34
Other scenarios					
Zero catch	0	0.00	1130	+60.20	-100.00
Status quo	431	0.51	635	-9.97	+39.26

*** SSB in the middle of the year.*

^ % change in SSB 2028 to 2026.

^^ Total catch in 2027 relative to catch in 2025.

Source: Own elaborations.

Basis of the advice

Table 3.19.4. Giant red shrimp in GSA 8, 9, 10, 11: The basis of the advice.

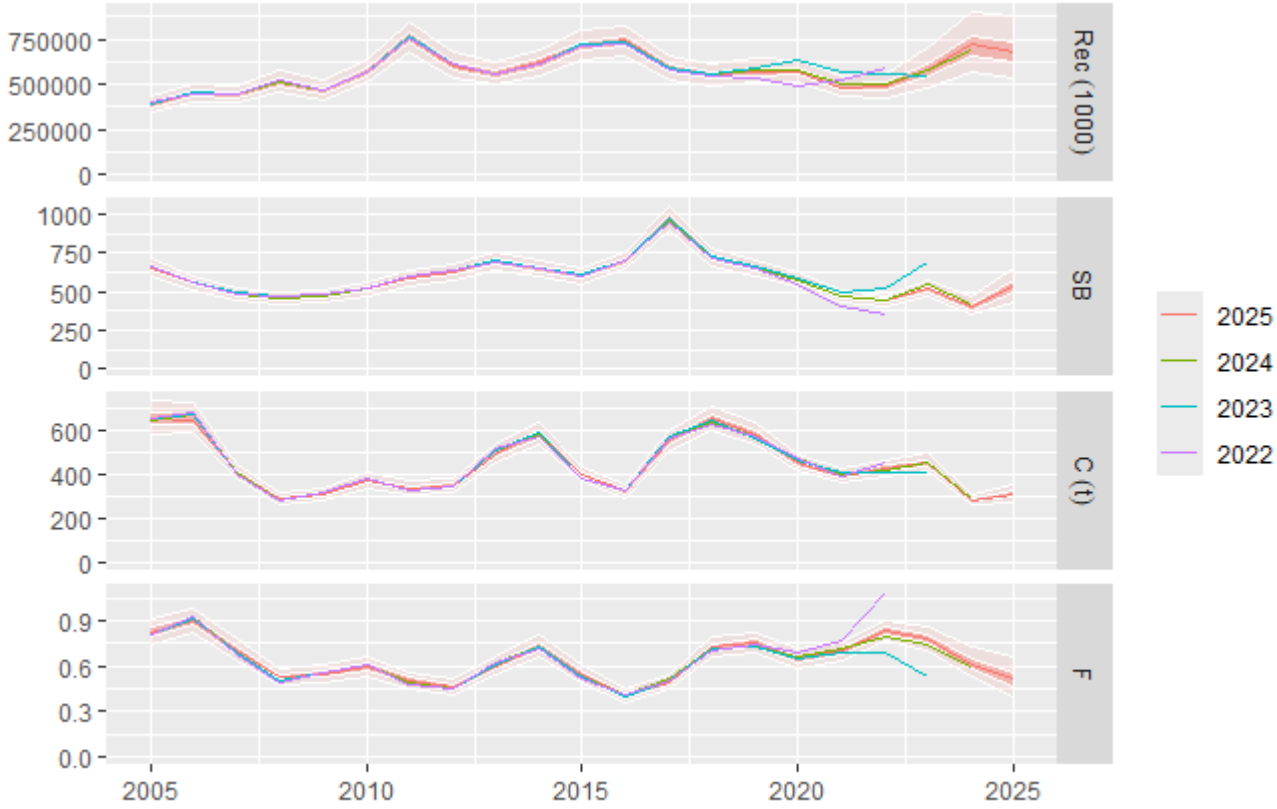
Advice basis	Western Mediterranean multiannual plan
Management plan	An EU Western Mediterranean multiannual plan (MAP) has been agreed by the EU for this stock (EU, 2019).

Source: Own elaborations.

Quality of the assessment

The model was updated with minor changes in the k values of the fmodel, which were increased to provide a better fit to the catches. The assessment model is considered moderately stable, and all diagnostics were considered acceptable.

Figure 3.19.3. Giant red shrimp in GSA 8, 9, 10, 11: retrospective analysis.



Source: Own elaborations.

Issues relevant for the advice

Changed assessment model as outlined above.

Reference points

Table 3.19.5. Giant red shrimp in GSA 8, 9, 10, 11: Reference points, values, and their technical basis, they were re-estimated in EWG26-09.

Framework	Reference point	Value	Technical basis	Source
MSY approach	FMSY	0.49	F0.1 as proxy for FMSY	STECF EWG 26-09
Precautionary approach	Blim	154	Default based on 25% BF0.1	STECF EWG 26-09
Precautionary approach	Bpa	309	Blim * 2	STECF EWG 26-09
Precautionary approach	BMSY	618	BF0.1	STECF EWG 26-09
Precautionary approach	Fpa		Not Defined	
Management plan	Blim		Not Defined	
Management plan	FMSY	0.49	F0.1 as proxy for FMSY	STECF EWG 26-09

Source: Own elaborations.

Basis of the assessment

Table 3.19.6. Giant red shrimp in GSA 8, 9, 10, 11: Basis of the assessment and advice.

Assessment type	Statistical catch at age
Input data	DCF commercial data (landings and discards) and scientific survey (MEDITS) data
Discards, BMS landings*, and bycatch	Discards included
Indicators	
Other information	
Working group	STECF EWG 26 -09

*BMS (Below Minimum Size) landings

Source: Own elaborations.

History of the advice, catch, and management

Table 3.19.7. Giant red shrimp in GSA 8, 9, 10, 11: STECF advice and catches reported to STECF. All weights are in tonnes.

Year	STECF advice	Predicted landings corresponding to advice	Predicted catch corresponding to advice	STECF Catch
2019	F = FMSY		171	571
2020	F = FMSY		199	351
2021	F = FMSY		323	519
2022	F = FMSY		241	405
2023	F = FMSY		270	402
2024	F = FMSY		279	304
2025	F = FMSY		312	302
2026	F = FMSY		340	
2027	F = FMSY		419	

Source: Own elaborations.

History of the catch and landings

Table 3.19.8. Giant red shrimp in GSA 8, 9, 10, 11: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes.

year	Bottom otter trawl GSA 10 ITA	Bottom otter trawl GSA 11 ITA	Bottom otter trawl GSA 9 ITA	Other GSA 10 ITA	Trammel nets GSA 10 ITA	Gillnets GSA 10 ITA	Gillnets GSA 9 ITA	Trammel nets GSA 9 ITA	Bottom otter trawl GSA 8 ITA
2003	125	72	30	16	7	0	0	0	0
2004	203	314	143	0	0	4	0	0	0
2005	498	171	76	0	0	7	2	0	0
2006	412	129	63	0	0	8	0	0	0
2007	291	82	37	0	0	9	0	0	0
2008	113	67	33	0	0	7	1	0	0
2009	206	117	34	0	0	5	0	0	0
2010	189	99	55	0	0	1	0	0	0
2011	135	95	68	0	0	6	0	0	0
2012	152	117	61	0	0	8	0	1	0
2013	399	124	23	0	0	0	0	0	0
2014	449	124	17	0	0	5	0	0	0
2015	215	98	44	18	0	0	0	0	0
2016	179	128	36	0	0	0	0	0	0
2017	327	249	34	0	0	0	0	0	0
2018	416	188	36	0	0	0	0	0	0
2019	450	141	44	0	0	0	0	0	18
2020	202	96	30	0	0	0	0	0	0
2021	317	171	31	0	0	0	0	0	0
2022	224	138	43	0	0	0	0	0	0
2023	173	113	114	0	0	0	0	0	0
2024	165	115	23	0	0	0	0	0	1
2025	158	116	27	0	0	0	0	0	1

Source: MS data submission under the 2026 Mediterranean and Black Sea data call - MARE/D1/CO (2026).

Partial Fishing Mortality by fleet and GSA

Table 3.19.9. Giant red shrimp in GSA 8, 9, 10, 11: Partial Fishing Mortality by country, gear and GSA (average over 3 most recent years).

age	Bottom otter trawl GSA 8 ITA	Bottom otter trawl GSA 9 ITA	Bottom otter trawl GSA 10 ITA	Bottom otter trawl GSA 11 ITA
0	0.000	0.000	0.000	0.000
1	0.001	0.023	0.091	0.044
2	0.002	0.072	0.298	0.163
3	0.006	0.225	0.616	0.366
4+	0.006	0.239	0.548	0.420

Source: Own elaborations.

4 DATA ISSUES

- Missing or poorly sampled LFDs are still an issue, especially due to necessity to go to gear level to estimate partial Fishing mortalities needed for the models used by EWG on the effort regime in the Western Med;
- MSs should be encouraged to routinely check data before uploading. R tools were provided to the MSs through the EU projects QualiTrain and RDBFIS;
- MSs need to make sure length frequency distributions (LFDs) provided for each stock and fleet are scaled to the landings and discards in volume/weight those LFDs represent;
- Besides missing MEDITS surveys during the Covid-19 crisis, late or incomplete MEDITS surveys continue hampering the quality of the assessment.

European hake in GSAs 1-5-6-7

As concerns MEDITS data from both France and Spain, some MEDITS data might need to be checked, since some very high raising factors are reported for some hauls (in TC and TB tables). The same occurs in commercial data from France.
As concerns Spain data, no length measurement was recorded for commercial data in GSA 7 in 2020. Total discards in GSA 7 for Spain are relatively low, but no length measurement has been recorded all over the historic period.

There is no more biological sampling on the Spanish trawlers operating in GSA 7 since 2020 (Covid-19 crisis). That means the data is based on fishers' declarations only, with possible confusion between taxa, and without LFDs.

Deep water rose shrimp in GSA 1

A negligible fraction of reported landings is incorrectly assigned to nets or longlines, however this had no impact on the assessment since the quantities are negligible.

An error was detected regarding the assignment of landings to a specific fishery in 2012, but this could be easily be fixed.

Length-frequency of discards were only available for a limited number of years, yet the total volume of discards remains minimal.

MEDITS data are not available for 2020 (Covid19 crisis).

Deep water rose shrimp in GSA 5, 6 & 7

There is no more biological sampling on the Spanish trawlers operating in GSA 7 since 2020 (Covid-19 crisis). That means the data is based on fishers' declarations only, with possible confusion between taxa, and without LFDs.

Red mullet in GSA 1

No major issues were found for red mullet in GSA 1, although for further analysis and more thorough work for the following years, the full time series of the age length keys would be required, together with an analysis of the age readings ensuring the quality of such readings. I would also like to stress that no age 0 individuals are present in the commercial

data nor in the survey. A signal of these individuals would increase the quality of the assessment.

Red mullet in GSA 6

Landings from small-scale fisheries/gears other than entangling nets (e.g., GTR, GNS) may be due to misreporting issues (e.g., FPO: pots and traps, LHP: pole lines, LLS: longlines), and should be checked. This issue was reported already by EWG 21-11.

Red mullet in GSA 7

There is no more biological sampling on the Spanish trawlers operating in GSA 7 since 2020 (Covid-19 crisis). That means the data is based on fishers' declarations only, with possible confusion between taxa (e.g., MUT vs MUR), and without LFDs.

Norway lobster in GSA 5

Duplicated discard records (e.g., 2025, Q3, GTR-DEF), and length data in landings corresponding to zero weight in the landings (e.g., 2011, Q4, OTB).

Norway lobster in GSA 6

LFDs data for landings were assigned to OTB-DEF only for year 2010, while for the period 2011-2018 they are assigned to OTB DEMSP.

European hake in GSAs 8-9-10-11

No survey data are available for GSAs 9, 10 and 11 in 2022 and for GSA 8 in 2020. In GSA10, survey coverage is incomplete in 2020 and 2023, with only 50% and 80% of the hauls carried out, respectively.

In GSA 10, there is a recurring coverage issue in commercial data due to poor sampling in the last years (e.g. missing quarters, no LFDs available for most of the gears). This could have an impact on the stability of the model, even if the issue is partially covered by the availability of data coming from the other GSAs.

Deep-water rose shrimp in GSAs 8, 9, 10 and 11

Commercial data present important gaps and inconsistencies across GSAs. In GSA 8 landings are available only since 2010, in GSAs 9 and 10 they start in 2003 and 2002 respectively and in GSA 11 data are available for 2002–2025. Discard data are incomplete, with a continuous series only for GSA 9 (2009–2025) and partial coverage in GSA 10 (2006, 2009–2017, 2019 and 2024–2025), while no discard information is available for GSA 8 and positive discards are reported only for 2025 in GSA 11. LFDs are not available for GSA 8, whereas in GSAs 9, 10 and 11 they are available but with temporal gaps. In these cases, missing LFDs were not reconstructed and a SoP correction was applied to the available landings LFDs to ensure consistency with the corresponding landings in weight. For discards, LFDs are available in GSAs 9 and 10 and only for 2025 in GSA 11, reflecting the same discontinuities as in the discard series. For MEDITS surveys, the survey was not carried out in GSAs 9, 10 and 11 in 2022, in GSA 8 in 2002 and 2020, and in 2020 only half of the

planned hauls were performed in GSA 10. In addition, surveys in 2017, 2020, 2021 and 2023 were conducted late in the season in GSAs 9, 10 and 11. The 2022 LFDs are available only for GSA 8 (France) and were not used in the assessment.

Red mullet in GSA 9

The MEDITS survey period changing significantly from one year to another especially in the last period of the time series hampered the quality of the data, thus not allowing achieving a quantitative assessment for this stock.

Red mullet in GSA 10

Overall, the quality and completeness of the data available for this assessment are considered poor. Commercial catch length-frequency distributions are almost entirely missing for the five-year period from 2019 to 2023. In other years, length-frequency data are also missing for some gears and were reconstructed where possible.

The MEDITS survey show substantial inconsistencies in survey timing, sampling coverage and data availability, particularly in recent years. In 2020, the survey was conducted in December, and only 37 of the 70 planned hauls were completed, corresponding to approximately 53% of the expected coverage. In 2023, the survey was again conducted in December, with 56 hauls completed, corresponding to approximately 80% of the planned coverage. Furthermore, no MEDITS survey was conducted in 2022.

Norway lobster in GSA 9

MEDITS was not performed in GSA 9 in 2022. The value of landing data in year 2017 reported to medbs data call show a large difference from what reported to FDI data call. The FDI value has been adopted in the stock assessment.

Norway lobster in GSA 11

Some limitations were identified in the commercial length-frequency data. For the period prior to 2009, the available information does not allow the number of individuals used to construct the LFDs to be determined. From 2009 onwards, although sampling information is available, commercial LFDs appear to have been derived, with some exceptions, from a relatively limited number of measured individuals. Since 2017, when information by quarter became available, the number of sampled individuals also shows substantial variability among quarters, indicating an uneven temporal distribution of sampling effort. In addition, some quarters were not covered: quarter 1 in 2017, 2020 and 2021; quarter 4 in 2022; and quarter 3 in 2023 and 2024. These limitations should be taken into account when evaluating the representativeness of the commercial LFDs and their contribution to the stock assessment, particularly for years and quarters characterised by low or absent sampling coverage.

Blue and red shrimp in GSAs 1 and 2

For the commercial data from GSA1 and GSA2, sex-ratio values for the largest size classes were fixed at 1 to address the unusually high values estimated for males at age 5. Sex-specific growth parameters and the length–weight relationship were not available for these GSAs; therefore, the corresponding parameters from the SAF of the GFCM WGSAD 2025

were used. Regarding the MEDITS index, data for 2020 were unavailable for both GSAs, while data for 2010 were also unavailable for GSA2.

Blue and red shrimp in GSA 5

During the implementation of the MEDITS survey in GSA5 (2007-2020), hauls were carried out in the westernmost part of GSA5 (west of Ibiza and Formentera) only in some years along the time series. Also, since 2021, MEDITS survey has started covering all the area around west of Ibiza and Formentera. To maintain the consistency along the time series and remove their potential noise in the overall model procedure, these hauls were removed from the stock assessment analysis.

Blue and red shrimp in GSAs 6 and 7

Landings from 2002 to 2011 need to be checked, since there are inconsistencies between landings reported in the DCF and those reported in the GFCM *Aristeus antennatus* report RF 2024. Unusual peak in length-frequencies for year 2025 regarding lengths 30 and 40.

There is no more biological sampling on the Spanish trawlers operating in GSA 7 since 2020 (Covid-19 crisis). That means the data is based on fishers' declarations only, with possible confusion between taxa, and without LFDs.

Blue and red shrimp in GSAs 8, 9, 10 and 11

No Length frequency distribution (LFD) is available for GSA 8. For GSA 9, yearly LFD data are available from 2003 onward, with a gap in 2004. Seasonal LFD data are available from 2017: up to 2021 all quarter were covered, but from 2022 onward some quarters are missing and in particular, two quarters are missing for the metier OTB DWS in 2023.

For GSA 10, yearly LFD data are available from 2003 onward, while seasonal data are available from 2017. Gaps occur in 2005, 2021, and 2023. Unlike 2022 and 2024, when three quarters were sampled, most years include data from only one or two quarters for each metier. The LFD distributions of the metier OTB MDD is only reliable in 2022 since in 2018 and 2025 only one quarter was sampled and it cannot be considered enough to obtain a good yearly LFD. Moreover, in 2024 quarter 2 and 2022 quarter 3 LFDs of the metier OTB DWS shown a distribution that is not comparable with any other LFD and are clearly truncated. These data were considered unreliable, likely due to the low number of animals sampled and raised to the entire catches, and reconstructed. For the period 2017-2024 the length frequency distribution is provided for a low percentage of the landings

For GSA 11, yearly LFD data are available from 2005 onward, and seasonal data from 2012. Only the metier OTB MDD is monitored for LFDs and in most of the year the four quarters are covered. Moreover, the LFDs in 2005 are available only for one quarter and the corresponding LFD resulted truncated and not comparable with any other LFDs. These data were considered unreliable, likely due to the low number of animals sampled and raised to the entire catches, and reconstructed.

Giant red shrimp in GSAs 8-9-10-11

As previously reported, no survey data are available for GSAs 9, 10 and 11 in 2022 and for GSA 8 in 2002 and 2020. Since the assessment dataset begins in 2005, only the 2022 data point is missing in the final model. Commercial data in GSA 10 has suffered from poor

sampling in previous years. The length frequency distribution was not available for 2023, and in 2019-2021 the quarters have only been partially covered. However, as in previous years, this gap has been compensated by the availability of data coming from the other GSAs.

Nevertheless, in GSA 10 in 2017, one data record present in the catch file was found to be missing from the landings file. However, this value was added to the total, to ensure consistency with the previous assessment, and the data were subsequently SOP-corrected. Moreover, in GSA 10 in 2018, the data seems to be provided by a 2 mm length class instead of 1.

5 REFERENCES

European Parliament and Council of the European Union. Regulation (EU) 2019/1022 of 20 June 2019 establishing a multiannual plan for the demersal stocks in the western Mediterranean Sea. Official Journal of the European Union L 172 (June 26, 2019): 1–17.

European Commission. (2024). QualiTrain Project: Quality checking of Mediterranean & Black Sea data and training for Member State experts (Framework Contract EASME/EMFF/2020/OP/021, Specific Contract No. 3). Data Collection Framework (DCF).

GFCM (2025). Benchmark assessment for Norway lobster in the Adriatic Sea. General Fisheries Commission for the Mediterranean (GFCM), Scientific Advisory Committee on Fisheries (SAC), Working Group on Stock Assessment in Demersal Species (WGSAD) https://gfcm.sharepoint.com/EG/Working%20Documents%20v2/Forms/AllItems.aspx?id=%2FEG%2FWorking%20Documents%20v2%2F2025%2FWGSAD%2FNEP%5F17%2D18%2FGFCM%5FWGSAD%5FNep%2EBench%5F2025%5FConclusions%20and%20recommendations%2Epdf&parent=%2FEG%2FWorking%20Documents%20v2%2F2025%2FWGSAD%2FNEP%5F17%2D18&p=true&ga=1

HCMR & European Commission, 2026. Regional Database and Fishery Information System for the Mediterranean and Black Sea (RDBFIS). Available at: <https://rdbfis.eu/>.

ICES (2022). ICES technical guidance for harvest control rules and stock assessments for stocks in category 2 and 3. In: Report of ICES Advisory Committee, 2022. ICES Advice 2022, Section 16.4.11. https://doi.org/10.17895/ices.advice.19801564

ICES (2026). Working Group for the Assessment of *Nephrops* Stocks (WGNEPH). ICES Scientific Reports. Report. https://doi.org/10.17895/ices.pub.30477911.v1

Ligas A. (2019). Recovery of fisheries historical time series for Mediterranean and Black Sea stock assessment, FINAL REPORT. European Commission, EASME, EMFF. doi: 10.2826/036672 https://cinea.ec.europa.eu/document/download/0930b34e-5778-4f83-b535-15d29e4123e9_en?filename=MediterraneanBlackSeaAssessment2019.pdf&prefLang=pt

STECF (2020) Scientific, Technical and Economic Committee for Fisheries (STECF) – Stock Assessments: demersal stocks in the western Mediterranean Sea (STECF-20-09), Simmonds, J., Pinto, C. and Mannini, A. editor(s), EUR 28359 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-27165-9, doi:10.2760/286667, JRC122993.

STECF (2022). Stock Assessments: demersal stocks in the western Mediterranean Sea. (STECF-22-09). Simmonds, E.J, Mannini, A., Kupschus, S. editor(s)Publications Office of the European Union, Luxembourg, 2023, doi:10.2760/00380, JRC132120

STECF (2023). Stock assessments in the Western Mediterranean Sea (STECF 23-09), Mannini, A., Ligas, A. and Pierucci, A. editor(s), Publications Office of the European Union, Luxembourg, 2023, doi:10.2760/995295, JRC135661.

STECF (2024) - Stock assessments in the Western Mediterranean Sea (STECF 24-10), Mannini, A., Ligas, A. and Pierucci, A. editor(s), Publications Office of the European Union, Luxembourg, 2025, https://data.europa.eu/doi/10.2760/9293847, JRC140633.

STECF (2025a). Evaluation of Fisheries Dependent Information (FDI) for EU fleets (STECF 24 11). LU: Publications Office. Available at: https://data.europa.eu/doi/10.2760/3446647 (Accessed November 25, 2025).

STECF (2025b). The 2025 annual economic report on the EU fishing fleet (STECF 25-03 & 25-07)., eds. R. Prellezo, E. C. Sabatella, J. Virtanen, and J. Guillen. LU: Publications Office of the European Union. doi: 10.2760/4088152

STECF (2025c). Stock assessments in the Western Mediterranean Sea (STECF 25-09), Jardim, E., Konrad, C. and Pierucci, A. (editors), Publications Office of the European Union, Luxembourg, 2025, https://data.europa.eu/doi/10.2760/0933691, JRC145093.

CONTACT DETAILS OF EWG 26-09 PARTICIPANTS

[1] - Information on EWG participant's affiliations is displayed for information only. In any case, Members of the STECF, invited experts, and JRC experts shall act independently. In the context of the STECF work, the committee members and other experts do not represent the institutions/bodies they are affiliated to in their daily jobs.

STECF members		
Name	**Affiliation[1]**	**Email**
Jardim, Ernesto	IPMA - Instituto Português do Mar e da Atmosfera Rua C do Aeroporto. 1749-077 Lisboa. Portugal	ernesto.jardim@gmail.com
Drouineau, Hilaire	INRAE, UR EABX, 50 avenue de Verdun, 33612 Cestas Cedex, France	hilaire.drouineau@inrae.fr

Invited experts		
Name	**Affiliation[1]**	**Email**
Allegretti, Francesco	Conisma/CIBM	francesco.allegretti1994@gmail.com
Armelloni, Enrico Nicola	Swedish University of Agricultural Sciences	enrico.e.armelloni@gmail.com
Caballero Lujan, Guillermo	Instituto Español de Oceanográfia (IEO-CSIC)	guille11caballero11@gmail.com
Certain, Gregoire	IFREMER	gregoire.certain@ifremer.fr
Chiarini, Matteo	COISPA Foundation	chiarini@fondazionecoispa.org
Constantini, Ilaria	CNR-IRBIM	ilaria.costantini@cnr.it

Couve, Pablo	ICATMAR (ICM-CSIC)	pablo.couve@gmail.com
Garcia, Encarni	Instituto Español de Oceanografía (IEO-CSIC)	encarnacion.garcia@ieo.csic.es
Murenu, Matteo	University of Cagliari	mmurenu@unica.it
Musumeci, Claudia	CIBM	clamusu@gmail.com
Palermino, Antonio	Italian National Research Council (CNR-IRBIM)	antonio.palermino@irbim.cnr.it
Penniselo Garriga, Mariona	ICATMAR - ICM (CSIC)	mariona.garripa@gmail.com
Perez-Rodriguez, Alfonso	Spanish Oceanographic Institute	alfonso.perez@ieo.csic.es
Pesci, Paola	University of Cagliari	ppesci@unica.it
Pierucci, Andrea	Freelance	andrea.pierucci@hotmail.it
Scanu, Martina	CNR-IRBIM	martina.scanu@irbim.cnr.it
Tifoura, Amina	Instituto Español de Oceanografía (IEO-CSIC)	amina.tifoura@ieo.csic.es

JRC Experts		
Name	**Affiliation**[1]	**Email**

Ligas, Alessandro	European Commission, Joint Research Centre (JRC), Ispra, Italy	Alessandro.LIGAS@ec.europa.eu
Mantopoulou Palouka, Danai	European Commission, Joint Research Centre (JRC), Ispra, Italy	Danai.MANTOPOULOU-PALOUKA@ec.europa.eu
Rincon-Hidalgo, Margarita	European Commission, Joint Research Centre (JRC), Ispra, Italy	Margarita.RINCON-HIDALGO@ec.europa.eu

European Commission		
Name	**Affiliation[1]**	**Email**
Mantopoulou Palouka, Danai	JRC STECF secretariat	Jrc-stecf-secretariat@ec.europa.eu
Osio, Giacomo Chato	DG MARE	Giacomo-Chat.OSIO@ec.europa.eu
Danto, Jules	DG MARE	Jules.DANTO@ec.europa.eu

List of Figures

Figure 3.1.1. European hake in GSAs 1, 5, 6, 7: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (Blue lines). The red line represents the reported catches time series. 36

Figure 3.1.2. European hake in GSAs 1, 5, 6, 7: Kobe plot showing the stock trajectory relative to biological reference points (F/FMSY and SSB/Bpa). The blue dashed line indicates SSB/Blim. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below Blim, representing a risk of impaired recruitment. 38

Figure 3.1.3. European hake in GSAs 1, 5, 6, 7: retrospective analysis. 39

Figure 3.2.1. Deep water rose shrimp in GSA 1: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (Blue lines). The red line represents the reported catches time series. 45

Figure 3.2.2. Deep water rose shrimp in GSA 1: retrospective analysis. 48

Figure 3.3.1. Deep water rose shrimp in GSAs 5, 6, 7: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (Blue lines). 51

Figure 3.3.2. Deep water rose shrimp in GSAs 5, 6, 7: retrospective analysis. 54

Figure 3.4.1. Red mullet in GSA 1: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (Blue lines). The red line represents the reported catches time series. 58

Figure 3.4.2. Red mullet in GSA 1: Kobe plot showing the stock trajectory relative to biological reference points (F/FMSY and SSB/Bpa). The blue dashed line indicates SSB/Blim. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below Blim, representing a risk of impaired recruitment. 60

Figure 3.4.3. Red mullet in GSA 1: retrospective analysis. 61

Figure 3.5.1. Red mullet in GSA 6: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (Blue lines). The red line represents the reported catches time series. 66

Figure 3.5.2. Red mullet in GSA 6: Kobe plot showing the stock trajectory relative to biological reference points (F/FMSY and SSB/Bpa). The blue dashed line indicates SSB/Blim. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below Blim, representing a risk of impaired recruitment. 68

Figure 3.5.3. Red mullet in GSA 6: retrospective analysis. 69

Figure 3.6.1. Red mullet in GSA 7: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (black lines). The red line represents the reported catches time series. 74

Figure 3.6.2. Red mullet in GSA 7: retrospective analysis. 77

Figure 3.7.1. Norway lobster in GSA 5: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (Blue lines). The red line represents the reported catches time series. 81

Figure 3.7.2. Norway lobster in GSA 5: Kobe plot showing the stock trajectory relative to biological reference points (F/FMSY and SSB/Bpa). The blue dashed line indicates SSB/Blim. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below Blim, representing a risk of impaired recruitment.....83

Figure 3.7.3. Norway lobster in GSA 5: retrospective analysis. 84

Figure 3.8.1. Norway lobster in GSA 6: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (red lines). The blue line represents the reported catches time series. 88

Figure 3.8.2. Norway lobster in GSA 6: Kobe plot showing the stock trajectory relative to biological reference points (F/FMSY and SSB/Bpa). The blue dashed line indicates SSB/Blim. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below Blim, representing a risk of impaired recruitment.....90

Figure 3.8.3. Norway lobster in GSA 6: retrospective analysis. 91

Figure 3.9.1. European hake in GSAs 8, 9, 10, 11: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (Blue lines). The red line represents the reported catches time series. 96

Figure 3.9.2. European hake in GSAs 8, 9, 10, 11: Kobe plot showing the stock trajectory relative to biological reference points (F/FMSY and SSB/Bpa). The blue dashed line indicates SSB/Blim. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below Blim, representing a risk of impaired recruitment. For this stock, the estimated SSB refers to SSB at the beginning of the following year.....98

Figure 3.9.3. European hake in GSAs 8, 9, 10, 11: retrospective analysis. 99

Figure 3.10.1. Deep water rose shrimp in GSAs 8, 9, 10, 11: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (red lines). The blue line represents the reported catches time series. 107

Figure 3.10.2. Deep water rose shrimp in GSAs 8, 9, 10, 11: Kobe plot showing the stock trajectory relative to biological reference points (F/F_{MSY} and SSB/B_{pa}). The blue dashed line indicates SSB/B_{lim}. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below B_{lim}, representing a risk of impaired recruitment. 109

Figure 3.10.3. Deep water rose shrimp in GSAs 8, 9, 10, 11: retrospective analysis.....110

Figure 3.11.1. Red mullet in GSA 9: Summary of the stock assessment. Time series of catches (landings and discards, top); harvest rate (catches/biomass index, bottom left), where the blue line represents the HRMSY proxy; and biomass index (bottom right), where the blue line

represents Itrigger, the blue dotted line represents Iloss, and the two orange segments represent the mean index of 2024-2025 and of 2021-2023. 116

Figure 3.12.1. Red mullet in GSA 10: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (red lines). The blue line represents the reported catches time series. 121

Figure 3.12.2. Red mullet in GSA 10: Kobe plot showing the stock trajectory relative to biological reference points (F/FMSY and SSB/Bpa). The blue dashed line indicates SSB/Blim. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below Blim, representing a risk of impaired recruitment. 123

Figure 3.12.3. Red mullet in GSA 10: retrospective analysis. 125

Figure 3.13.1. Norway lobster in GSA 9: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (red lines). The blue line represents the reported catches time series. 129

Figure 3.13.2. Norway lobster in GSA 9: Kobe plot showing the stock trajectory relative to biological reference points (F/FMSY and SSB/Bpa). The blue dashed line indicates SSB/Blim. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below Blim, representing a risk of impaired recruitment. 131

Figure 3.13.3. Norway lobster in GSA 9: retrospective analysis. 132

Figure 3.14.1. Norway lobster in GSA 11: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (Blue lines). The red line represents the reported catches time series 137

Figure 3.14.2. Norway lobster in GSA 11: Kobe plot showing the stock trajectory relative to biological reference points (F/FMSY and SSB/Bpa). The blue dashed line indicates SSB/Blim. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below Blim, representing a risk of impaired recruitment. 139

Figure 3.14.3. Norway lobster in GSA 11: retrospective analysis. 141

Figure 3.15.1. Blue and red shrimp in GSAs 1, 2: Summary of the stock assessment. Time series of catches (top); harvest rate (catches/biomass index, bottom left), where the blue line represents de $HR_{MSY\ proxy}$; and biomass index (bottom right), where the blue line represents $I_{trigger}$, the blue dotted line represents I_{loss}, and the two orange segments represent the mean index of 2021, 2022, and 2023 and of 2024 and 2025. 147

Figure 3.16.1. Blue and red shrimp in GSA 5: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (Blue lines). The red line represents the reported catches time series. 153

Figure 3.16.2. Blue and red shrimp in GSA 5: Kobe plot showing the stock trajectory relative to biological reference points (F/FMSY and SSB/Bpa). The blue dashed line indicates SSB/Blim. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below Blim, representing a risk of impaired recruitment. 155

Figure 3.16.3. Blue and red shrimp in GSA 5: retrospective analysis. 157

Figure 3.17.1. Blue and red shrimp in GSAs 6, 7: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (red lines). The blue line represents the reported catches time series.....162

Figure 3.17.2. Blue and red shrimp in GSAs 6, 7: Kobe plot showing the stock trajectory relative to biological reference points (F/FMSY and SSB/Bpa). The blue dashed line indicates SSB/Blim. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below Blim, representing a risk of impaired recruitment. 164

Figure 3.17.3. Blue and red shrimp in GSAs 6, 7: retrospective analysis. 166

Figure 3.18.1. Blue and red shrimp in GSA 8, 9, 10, 11: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (Blue lines). The red line represents the reported catches time series. 171

Figure 3.18.2. Blue and red shrimp in GSA 8, 9, 10, 11: Kobe plot showing the stock trajectory relative to biological reference points (F/FMSY and SSB/Bpa). The blue dashed line indicates SSB/Blim. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below Blim, representing a risk of impaired recruitment. 173

Figure 3.18.3. Blue and red shrimp in GSA 8, 9, 10, 11: retrospective analysis. 175

Figure 3.19.1. Giant red shrimp in GSA 8, 9, 10, 11: Trends in catch, recruitment, fishing mortality and SSB resulting from the a4a model (red lines). The blue line represents the reported catches time series. 180

Figure 3.19.2. Giant red shrimp in GSA 8, 9, 10, 11: Kobe plot showing the stock trajectory relative to biological reference points (F/FMSY and SSB/Bpa). The blue dashed line indicates SSB/Blim. Green quadrant indicates sustainable exploitation with biomass above precautionary limits; red quadrant indicates overfishing with biomass below precautionary limits; orange quadrants indicate either overfishing or biomass below precautionary limits. The red shaded area indicates the stock is below Blim, representing a risk of impaired recruitment. 182

Figure 3.19.3. Giant red shrimp in GSA 8, 9, 10, 11: retrospective analysis. 184

List of Tables

Table 1 Summary of the work attempted and basis for advice in 2025 and 2026 assessments. a4a: a statistical catch-at-age model.....5

Table 2 Summary of advice and stock status by area and species from EWG 26-09. Official catch corresponds to total catch (landings and discards) reported in the Mediterranean and Black Sea data call, whereas modelled catch is estimated in the stock assessment. Stock status is provided as F over F_{MSY} (or its proxy), SSB over B_{lim} and SSB over B_{pa}. For stocks that spawn in the beginning of the year (hake in GSAs 1_5_6_7 and hake in GSAs 8_9_10_11),

SSB and the SSB ratios refer to 2026. For blue and red shrimp and for giant red shrimp catch in 2027 is based on fishing at F_{MSY} in 2027. 10

Table 2.1. Summary of the work attempted and basis for advice in 2025 (EWG 25-09) and 2026 (EWG 26-09) assessments. a4a: an age-based assessment method; Index refers to the ICES Category 3 approach to provide advice for stocks without analytic assessment; Catch only option refers to the ICES Category 5 approach. 28

Table 2.2 Summary of advice and stock status from EWG 26-09 by stock. Stock status is provided as F over Fmsy, SSB over Blim and SSB over Bpa. For stocks that spawn in the beginning of the year, SSB in 2026 is used to compute the ratio. Catch in 2027 is based on fishing at FMSY in 2027. Reference point definitions and calculations are reported in Annex 1 - Methods of the EWG report. 29

Table 2.2.1. Reference points. 34

Table 3.1.1. European hake in GSAs 1, 5, 6, 7: Assessment summary. Weights are in tonnes. Catches estimated by the model. 37

Table 3.1.2. European hake in GSAs 1, 5, 6, 7: The basis of the advice. 39

Table 3.1.3. European hake in GSAs 1, 5, 6, 7: Reference points, values, and their technical basis; the values from EWG 25-09 were retained. 40

Table 3.1.4. European hake in GSAs 1, 5, 6, 7: Basis of the assessment and advice. 41

Table 3.1.5. European hake in GSAs 1, 5, 6, 7: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes. 42

Table 3.1.6. European hake in GSAs 1, 5, 6, 7: Partial Fishing Mortality by country, gear and GSA (average over 3 most recent years). 44

Table 3.2.1. Deep water rose shrimp in GSA 1: Assessment summary. Weights are in tonnes. Catches estimated by the model. 46

Table 3.2.2. Deep water rose shrimp in GSA 1: The basis of the advice. 47

Table 3.2.3. Deep water rose shrimp in GSA 1: Reference points, values, and their technical basis. 48

Table 3.2.4. Deep water rose shrimp in GSA 1: Basis of the assessment and advice. 49

Table 3.2.5. Deep water rose shrimp in GSA 1: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes. Almost all catch arise from OTB, small values were reported for other gears but are likely misreporting. 50

Table 3.3.1. Deep water rose shrimp in GSAs 5, 6, 7: Assessment summary. Weights are in tonnes. Catches estimated by the model. 52

Table 3.3.2. Deep water rose shrimp in GSAs 5, 6, 7: The basis of the advice. 53

Table 3.3.3. Deep water rose shrimp in GSAs 5, 6, 7: Reference points, values, and their technical basis. 54

Table 3.3.4. Deep water rose shrimp in GSAs 5, 6, 7: Basis of the assessment and advice. 55

Table 3.3.5. Deep water rose shrimp in GSAs 5, 6, 7: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes. 56

Table 3.3.6. Deep water rose shrimp in GSAs 5, 6, 7: Partial Fishing Mortality by country, gear and GSA (average over 3 most recent years). 57

Table 3.4.1. Red mullet in GSA 1: Assessment summary. Weights are in tonnes. Catches estimated by the model. 59

Table 3.4.2. Red mullet in GSA 1: The basis of the advice. 61
Table 3.4.3. Red mullet in GSA 1: Reference points, values, and their technical basis. 62
Table 3.4.4. Red mullet in GSA 1: Basis of the assessment and advice. 63
Table 3.4.5. Red mullet in GSA 1: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes. 64
Table 3.4.6. Red mullet in GSA 1: Partial Fishing Mortality by country, gear and GSA (average over 3 most recent years). 65
Table 3.5.1. Red mullet in GSA 6: Assessment summary. Weights are in tonnes. Catches estimated by the model. 67
Table 3.5.2. Red mullet in GSA 6: The basis of the advice. 69
Table 3.5.3. Red mullet in GSA 6: Reference points, values, and their technical basis, they were re-estimated in EWG25-09 as the assessment model had changed. 70
Table 3.5.4. Red mullet in GSA 6: Basis of the assessment and advice. 71
Table 3.5.5. Red mullet in GSA 6: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes. 72
Table 3.5.6. Red mullet in GSA 6: Partial Fishing Mortality by country, gear and GSA (average over 3 most recent years). 73
Table 3.6.1. Red mullet in GSA 7: Assessment summary. Weights are in tonnes. Catches estimated by the model. 75
Table 3.6.2. Red mullet in GSA 7: The basis of the advice. 76
Table 3.6.3. Red mullet in GSA 7: Reference points, values, and their technical basis. 77
Table 3.6.4. Red mullet in GSA 7: Basis of the assessment and advice. 78
Table 3.6.5. Red mullet in GSA 7: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes. 79
Table 3.6.6. Red mullet in GSA 7: Partial Fishing Mortality by country, gear and GSA (average over 3 most recent years). 80
Table 3.7.1. Norway lobster in GSA 5: Assessment summary. Weights are in tonnes. Catches estimated by the model. 82
Table 3.7.2. Norway lobster in GSA 5: The basis of the advice. 84
Table 3.7.3. Norway lobster in GSA 5: Reference points, values, and their technical basis, they were estimated in EWG 26-09 as a quantitative assessment model had been approved for this stock. 85
Table 3.7.4. Norway lobster in GSA 5: Basis of the assessment and advice. 86
Table 3.7.5. Norway lobster in GSA 5: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes. 86
Table 3.8.1. Norway lobster in GSA 6: Assessment summary. Weights are in tonnes. Catches estimated by the model. 89
Table 3.8.2. Norway lobster in GSA 6: The basis of the advice. 91
Table 3.8.3. Norway lobster in GSA 6: Reference points, values, and their technical basis, they were re-estimated in EWG25-09. 92
Table 3.8.4. Norway lobster in GSA 6: Basis of the assessment and advice. 93

Table 3.8.5. Norway lobster in GSA 6: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes. 94

Table 3.9.1. European hake in GSAs 8, 9, 10, 11: Assessment summary. Weights are in tonnes. Catches estimated by the model. SSB estimated in the beginning of the year. 97

Table 3.9.2. European hake in GSAs 8, 9, 10, 11: The basis of the advice. 99

Table 3.9.3. European hake in GSAs 8, 9, 10, 11: Reference points, values, and their technical basis. 100

Table 3.9.4. European hake in GSAs 8, 9, 10, 11: Basis of the assessment and advice. 101

Table 3.9.5. European hake in GSAs 8, 9, 10, 11: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes. 102

Table 3.9.6. European hake in GSAs 8, 9, 10, 11: Partial Fishing Mortality by country, gear and GSA (average over 3 most recent years). 106

Table 3.10.1. Deep water rose shrimp in GSAs 8, 9, 10, 11: Assessment summary. Weights are in tonnes. Catches estimated by the model. 108

Table 3.10.2. Deep water rose shrimp in GSAs 8, 9, 10, 11: The basis of the advice. 109

Table 3.10.3. Deep water rose shrimp in GSAs 8, 9, 10, 11: Reference points, values and technical basis, re-estimated by STECF EWG 26-09. 111

Table 3.10.4. Deep water rose shrimp in GSAs 8, 9, 10, 11: Basis of the assessment and advice. 112

Table 3.10.5. Deep water rose shrimp in GSAs 8, 9, 10, 11: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes. 112

Table 3.10.6. Deep water rose shrimp in GSAs 8, 9, 10, 11: Partial Fishing Mortality by country, gear and GSA (average over 3 most recent years). 114

Table 3.11.1. Red mullet in GSA 9: Assessment summary. Weights are in tonnes. 115

Table 3.11.2. Red mullet in GSA 9: State of the stock and fishery relative to reference points. 117

Table 3.11.3. Red mullet in GSA 9: Basis for the catch scenarios. 117

Table 3.11.4. Red mullet in GSA 9: Basis for the catch scenarios. 118

Table 3.11.5. Red mullet in GSA 9: Reference points, values, and their technical basis. 119

Table 3.11.6. Red mullet in GSA 9: Basis of the assessment and advice 119

Table 3.11.7. Red mullet in GSA 9: STECF advice and catches reported to STECF. All weights are in tonnes. 120

Table 3.11.8. Red mullet in GSA 9: History of commercial landings; official reported values are presented by country and GSA 9; all weights are in tonnes. 120

Table 3.12.1. Red mullet in GSA 10: Assessment summary. Weights are in tonnes. Catches estimated by the model. 122

Table 3.12.2. Red mullet in GSA 10: The basis of the advice. 124

Table 3.12.3. Red mullet in GSA 10: Reference points, values, and their technical basis, they were estimated in EWG 26-09. 126

Table 3.12.4. Red mullet in GSA 10: Basis of the assessment and advice. 126

Table 3.12.5. Red mullet in GSA 10: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes. 127

Table 3.12.6. Red mullet in GSA 10: Partial Fishing Mortality by country, gear and GSA (average over 3 most recent years). 128

Table 3.13.1. Norway lobster in GSA 9: Assessment summary. Weights are in tonnes. Catches estimated by the model. 130

Table 3.13.2. Norway lobster in GSA 9: The basis of the advice. 132

Table 3.13.3. Norway lobster in GSA 9: Reference points, values, and their technical basis. Reference points were re-computed by EWG 26-09..... 133

Table 3.13.4. Norway lobster in GSA 9: Basis of the assessment and advice. 134

Table 3.13.5. Norway lobster in GSA 9: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes. 135

Table 3.14.1. Norway lobster in GSA 11: Assessment summary. Weights are in tonnes. Catches estimated by the model. 138

Table 3.14.2. Norway lobster in GSA 11: The basis of the advice. 140

Table 3.14.3. Norway lobster in GSA 11: Reference points, values, and their technical basis. 142

Table 3.14.4. Norway lobster in GSA 11: Basis of the assessment and advice. 143

Table 3.14.5. Norway lobster in GSA 11: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes. 144

Table 3.15.1. Blue and red shrimp in GSAs 1, 2: Assessment summary. Weights are in tonnes. 146

Table 3.15.2. Blue and red shrimp in GSAs 1, 2: State of the stock and fishery relative to reference points. 148

Table 3.15.3. Blue and red shrimp in GSAs 1, 2: Basis for the catch scenarios. 148

Table 3.15.4. Blue and red shrimp in GSAs 1, 2: Basis for the catch scenarios. 149

Table 3.15.5. Blue and red shrimp in GSAs 1, 2: Reference points, values, and their technical basis. 150

Table 3.15.6. Blue and red shrimp in GSAs 1, 2: Basis of the assessment and advice. 150

Table 3.15.7. Blue and red shrimp in GSAs 1, 2: STECF advice and catches reported to STECF. All weights are in tonnes. 151

Table 3.15.8. Blue and red shrimp in GSAs 1, 2: History of commercial landings and discards; official reported values are presented by country and GSA 1&2; all weights are in tonnes. 152

Table 3.16.1. Blue and red shrimp in GSA 5: Assessment summary. Weights are in tonnes. Catches estimated by the model. 154

Table 3.16.2. Blue and red shrimp in GSA 5: Assumptions made for the interim year and in the forecast. 156

Table 3.16.3. Blue and red shrimp in GSA 5: Annual catch scenarios. All weights are in tonnes. 156

Table 3.16.4. Blue and red shrimp in GSA 5: The basis of the advice. 156

Table 3.16.5. Blue and red shrimp in GSA 5: Reference points, values, and their technical basis, they were estimated in EWG26-09 as the assessment model had changed. 158

Table 3.16.6. Blue and red shrimp in GSA 5: Basis of the assessment and advice. 159

Table 3.16.7. Blue and red shrimp in GSA 5: STECF advice and STECF estimates of catches reported to STECF. All weights are in tonnes. 159

Table 3.16.8. Blue and red shrimp in GSA 5: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes. 160

Table 3.16.9. Blue and red shrimp in GSA 5: Partial Fishing Mortality by country, gear and GSA (average over 3 most recent years). 161

Table 3.17.1. Blue and red shrimp in GSAs 6, 7: Assessment summary. Weights are in tonnes. Catches estimated by the model. 163

Table 3.17.2. Blue and red shrimp in GSAs 6, 7: Assumptions made for the interim year and in the forecast. 165

Table 3.17.3. Blue and red shrimp in GSAs 6, 7: Annual catch scenarios. All weights are in tonnes. 165

Table 3.17.4. Blue and red shrimp in GSAs 6, 7: The basis of the advice. 166

Table 3.17.5. Blue and red shrimp in GSAs 6, 7: Reference points, values, and their technical basis. 167

Table 3.17.6. Blue and red shrimp in GSAs 6, 7: Basis of the assessment and advice. 168

Table 3.17.7. Blue and red shrimp in GSAs 6, 7: STECF advice and catches reported to STECF. All weights are in tonnes. 168

Table 3.17.8. Blue and red shrimp in GSAs 6, 7: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes. 169

Table 3.17.9. Blue and red shrimp in GSAs 6, 7: Partial Fishing Mortality by country, gear and GSA (average over 3 most recent years). 170

Table 3.18.1. Blue and red shrimp in GSA 8, 9, 10, 11: Assessment summary. Weights are in tonnes. Catches estimated by the model. 172

Table 3.18.2. Blue and red shrimp in GSA 8, 9, 10, 11: Assumptions made for the interim year and in the forecast. 174

Table 3.18.3. Blue and red shrimp in GSA 8, 9, 10, 11: Annual catch scenarios. All weights are in tonnes. 174

Table 3.18.4. Blue and red shrimp in GSA 8, 9, 10, 11: The basis of the advice. 175

Table 3.18.5. Blue and red shrimp in GSA 8, 9, 10, 11: Reference points, values, and their technical basis. 176

Table 3.18.6. Blue and red shrimp in GSA 8, 9, 10, 11: Basis of the assessment and advice. 177

Table 3.18.7. Blue and red shrimp in GSA 8, 9, 10, 11: STECF advice and catches reported to STECF. All weights are in tonnes. 177

Table 3.18.8. Blue and red shrimp in GSA 8, 9, 10, 11: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes. 178

Table 3.18.9. Blue and red shrimp in GSA 8, 9, 10, 11. Partial Fishing Mortality by country, gear and GSA (average over 3 most recent years). 179

Table 3.19.1. Giant red shrimp in GSA 8, 9, 10, 11: Assessment summary. Weights are in tonnes. 181

Table 3.19.2. Giant red shrimp in GSA 8, 9, 10, 11: Assumptions made for the interim year and in the forecast. 183

Table 3.19.3. Giant red shrimp in GSA 8, 9, 10, 11: Annual catch scenarios. All weights are in tonnes. 183

Table 3.19.4. Giant red shrimp in GSA 8, 9, 10, 11: The basis of the advice. 184

Table 3.19.5. Giant red shrimp in GSA 8, 9, 10, 11: Reference points, values, and their technical basis, they were re-estimated in EWG26-09. 185

Table 3.19.6. Giant red shrimp in GSA 8, 9, 10, 11: Basis of the assessment and advice. . 186

Table 3.19.7. Giant red shrimp in GSA 8, 9, 10, 11: STECF advice and catches reported to STECF. All weights are in tonnes. 186

Table 3.19.8. Giant red shrimp in GSA 8, 9, 10, 11: History of catches; official reported values are presented by country, gear and GSA. All weights are in tonnes. 187

Table 3.19.9. Giant red shrimp in GSA 8, 9, 10, 11: Partial Fishing Mortality by country, gear and GSA (average over 3 most recent years). 188

6 ANNEXES

METHODS

1 Data Quality

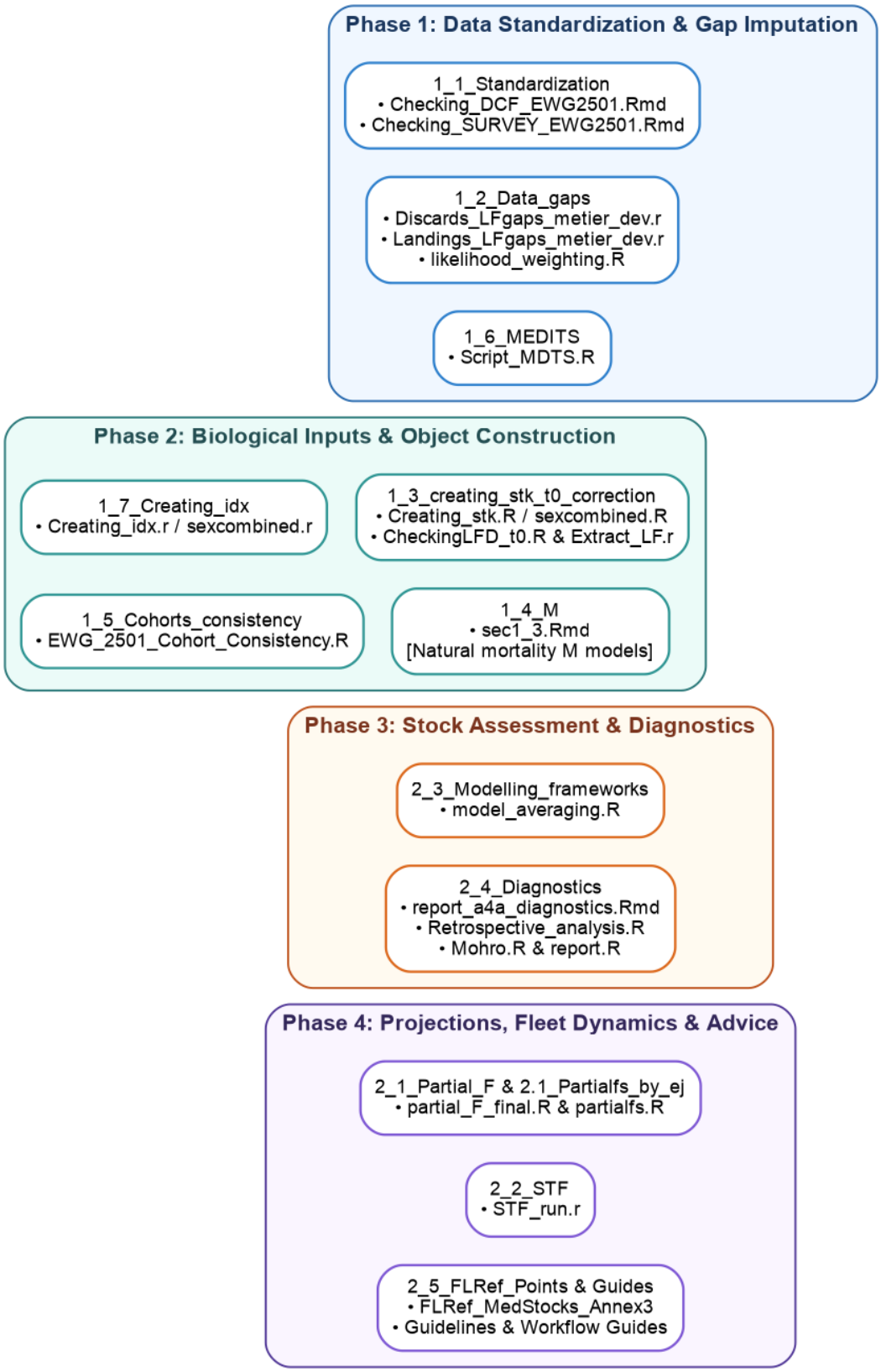
JRC Script on quality checks

The quality checks on commercial data, provided through the Official Mediterranean and Black Sea Data Calls, were based on a suite of R scripts initially developed during the EWG 21-02 (https://stecf.jrc.ec.europa.eu/ewg2102), and then reorganized and extended before and during EWG 22-03 to provide a single pdf output structure. The scripts then have been further developed and checked through the Methodological Groups EWG 24-02 and EWG 25-01.

Figure A.1 describes the script files that were provided to the experts. The structure follows the guidelines and workflow agreed during the EWG 25-01.

The R scripts have been provided to the group in the workspace.

Figure A.1 Contents of the Scripts folder provided to the experts by JRC.



Source: own elaborations.

2 Data Preparation

In addition to data quality checks' a series of fill-in procedures were developed in EWG 21-02 and further developed in EWG 22-03 and EWG 24-02, then finalized in EWG 25-01 (with the support of the QualiTrain EU project); for replacing poor or missing commercial catch sampling, the basis of these is described below.

2.1 Fill-in procedures

As decided by the EWG 25-09, the fill-in procedures should shift from the metier level to the gear level to reduce the number of assumptions required during the reconstruction. The EWG 25-09 highlighted "A reoccurring issue affecting most stocks is the need to prepare data at the métier level, where data collection is often insufficient across many métiers. This leads to increasing the number of assumptions made with regards to the age signals through the stock's assessment period. It was felt that the gear level would be most adequate for most stocks." (pag. 35, STECF EWG 25-09). The procedures used in this EWG for filling in landings and discard LFDs are documented below.

2.2 Fill in for length Frequency distributions for landings

For missing year(s) the procedure for filling-in LFDs for landings is first to identify combinations of years/fleets or metiers with catches, but missing LFDs. If there is sufficient data on length from the same gear, the other years of data are used as fill-ins based on the mean or the median of the LFDs.

- mean is used for normal distributions, which have no outliers.
- median is generally used to return the central tendency for skewed distribution or when outliers are observed.

For the choice of year ranges for fill-ins, the two main options are to use the mean of the available data or to use two or more adjacent years either side of the gap.

- Less than 5%: If fill-in is a small part of catch (less than 5%), then any solution is acceptable as the impact of the fill-in will be negligible.
- Trend in mean length: If there is trend in the LFDs (seen as trends on mean or quartile values), then using adjacent data may be preferable.
- High annual variability: If variability in the data (again seen as variability on mean and quartiles) is large, then full data set is likely to be better the best source of the fill-in.
- Similar to a sampled metier: If the missing LFDs are expected to be similar to another well sampled gear, data from that gear is used to provide the LFDs. In some cases, this is done by assuming the whole fishery is the best source of information for a year and the whole catch is raised with the available data.
- Years with substantial gaps: If a fill-in is more than 50% of the catch users need to consider highlighting this for estimation in the model.

2.3 Fill-in for discards data

STECF has been requested to provide advice based on catch rather than landings, so inclusion of discard data is important in that context. In any case advice on landings based on a landings-only assessment is conditional on the assumption that discarding is constant both as a proportion of catch and in fraction at length discarded, so the use of landings data alone would not solve the problem of missing discard information. In a few cases discarding has been found to be negligible and consisting of individuals that are damaged and unmarketable, thus any discard amounts can be raised using landing LFDs. In other cases,

discarding is occurring, but information is often much more sparse than that for landings and the total amount of discards is found to be non-negligible especially for species such as red mullet, and possibly hake. Discarding can also be confined only to trawl fleets, both otter or beam trawls, with size-based discarding occurring more rarely in gillnet, trammel net or longline fisheries.

2.4 Quantities of discards by years

Unlike landings data where the total amount is available, in some years there has been very poor or missing information on both the total amount of discards as well as the LFDs, either because discard sampling failed or was not required or implemented in those years. In cases where sampling has missed discarding observed in all other years for a fleet or where fishing occurred before a discard program began, the first step is to insert estimated discard quantities for the years without discard records. This is computed based on the discard fraction from years with discard data and is suitable for situations where discard rates are variable due to natural variability of uncertainty due to low levels of sampling. If trends in discard rates are observed or regulations have changed subsets of years should be used. In either case the specific years/fleets used to obtain discard rates should be specified in the report.

2.5 Missing LFDs

- Fleets with known discarding: missing LFDs are filled in following the same procedure as for landings, using the LFDs from available years. In this case, the median is often used, as distributions tend to be skewed, and there are few observations.
- Fleets with occasional discard reports: In some cases, the discards are not the result of undersized or small individuals but are likely the result of damaged individuals with a similar size distribution as the catch. In this case, the LFD may be taken from the landed component, usually by raising the fleet level with a Sum of Products (SOP) correction applied at fleet of total catch level as appropriate.

3 Length slicing

Data for most stocks in this EWG are collected as length samples. In most cases ages are obtained by deterministic length slicing based on calendar year growth points derived from von Bertalanffy growth functions, by sex or sex combined. This aligns growth to the fishery management year, and assigns catch at length correctly through the calendar year. In the case of red mullet in GSA 7 slicing to age is by fixed ALK across years, but with the same age assignment with time discussed below for summer spawning. In the case of the deterministic length slicing from von Bertalanffy growth functions, stocks such as both hake stocks assume growth is calculated from time 0 at spawning at 1st of January thus the calendar aligns with the growth year and catches are correctly assigned by year. However, many stocks in the EWG have midyear spawning or spawning throughout the year assigned to midyear as the ‘average’ point. In this case average growth from spawning to the end of the calendar will occur for 6 months from 1st July to 31st December in the first year (age 0) and then for 12 months January to January in subsequent years. If the growth curves have been calculated on a time bases with the origin (time 0) at spawning time then growth in the first 6 months is at age 0 and 6 to 18 months to age 1, etc. For these species the T0 in the von Bertalanffy function is increased by 0.5 of a year, the time in the year that it is assumed spawning occurs. The size at each birthday is then checked to ensure the function is working as expected. For some species with midyear spewing the growth functions come from calendar year evaluations and already account for the 1st of January annual birthday in the

ageing, in this case no correction is needed or applied. Again, checking length at 1st January ensures the function is working as expected.

4 Partial Catches for the calculation of partial fishing mortality

Partial fishing mortality (Fp) is derived proportionally from observed partial catch-at-age matrices where:

Fp = F * Cp/C

where Cp and C the observed partial and total catches in numbers at age and F the fishing mortality age estimated by the assessment. By ensuring that partial catches sum exactly to the total ones the partial fishing mortality sums exactly to the total one.

To maintain the consistency, aggregated catch objects are suggested to be constructed bottom up. Total catch numbers are derived by summing and weight at age are derived by calculating the means of the partial catch weight at age weighted by the partial catch numbers. To ensure the consistency of each partial catch object, its SoP must match its total catches in tonnes. In case that's not the case the object is SoP corrected.

There are cases where the catches in tonnes is reported for a certain combination of area country and gear but the catch-at-age distribution is missing. Then depending on the occasion several approaches are taken:

- If the parital catches are considered negligible relative to the total catch these are allocated to a similirar gear.
- If there are only some years of missing catch-at age distribution a composition from a neighboring area/country and the same gear migh be borrowed.
- In other occasions the aggregated catch-age distribution might be borrowed for partial catches with no age distribution, by ensuring that the final object will be properly SoP corrected and the borrowed distribution will not be added twice

All of the above analysis was performed prior to the assessment to ensure the consistency of the final input object.

5 Basis of the catch and fishing mortality advice

The basis of the advice provided depends on the type and quality of information available from the analyses as follows:

- Full assessment and reference points: stock status and, for red shrimps (blue and red shrimp, and giant red shrimp, FAO codes ARA and ARS), catch advice at MSY based on short term forecast (14 stocks, and 4 stocks, respectively)
- Full assessment without reference points: trends in biomass and fishing mortality (3 stocks).
- Trend based indicator: Catch / Effort advice under MSY considerations based on ICES category 3 process (2 stocks).

6 Assessment of stock status

The stock status of stocks with full assessments and reference points was derived from: (i) biomass at the moment of spawning, or (ii) biomass at the beginning of the following year when spawning is set at the beginning of the year, to reflect the impact of fishing mortality during that year. For stocks with a spawning period at the beginning of the year, SSB reflects the effect of fishing in the previous year. To capture the effect of fishing in the most recent

year of data, SSB must be computed at the end of that year, which in these cases corresponds to the SSB at the beginning of the following year.

For the stocks of ARA5, NEP5, ARA891011, MUT10 and NEP11, the EWG used the stochastic assessment results to compute the ratio between F and Fmsy, which is used to define the stock exploitation level. The ratio is first computed across all iterations of F and Fmsy, generating the empirical distribution of the ratio. The exploitation level is estimated as the median of the distribution. In those cases the median of the empirical distribution of the ratio between F and Fmsy may not be numerically equal to the ratio of the medians of the empirical distributions of F and Fmsy.

7 Reference points Methods

Following the methods described in EWG 24-01 and EWG 22-03, most stocks used F0.1 for Fmsy proxy and the SSB generated when fishing at F0.1 as Bmsy. Blim and Bpa for these stocks were computed as 0.25 x Bmsy and 0.5 x Bmsy, respectively.

The stocks of European hake and Norway lobster in GSA 6 used Fmax as proxy for Fmsy. Hake in GSAs 1, 5, 6 & 7 used the segmented regression breakpoint to define Blim, while hake in GSA 8, 9, 10, 11 and Norway lobster in GSA 6 used SSB corresponding to Fmax as a proxy of Bmsy. For hake in GSAs 1, 5, 6 & 7 Bpa and Bmsy were computed as 2 x Blim and 4 x Blim, respectively. For hake in GSAs 8, 9 10 & 11 and Norway lobster in GSA 6, Blim and Bpa were computed as 0.25 x Bmsy and 0.5 x Bmsy, respectively.

To decide whether reference points should be updated, the previous year's reference points were compared with the empirical distribution of the reference points computed from this year's assessment. These distributions are obtained by estimating a set of reference points for each iteration of the relevant quantities, such as catch numbers at age, stock numbers at age, and fishing mortality at age. These iterations are generated with the 'simulate' method, which uses the parameters estimated by the model, along with their covariance matrix, to simulate multivariate normal parameters on the log scale, adding estimation uncertainty to those quantities. For the stocks with no changes in terms of input data and model settings, if the previous estimate fell within the 95% confidence interval, the reference points were not updated. Note that the proper approach would be to compute the distribution of last year's reference points and check whether this year's estimate fell within that confidence interval. However, this was not possible as the information needed to compute the empirical distribution of those reference points was not available.

7.1 MSY Ranges

The EWG has been requested to provide MSY ranges for the most vulnerable stocks. This work was done using a full feedback loop MSE, similar to those used in EWG 26-03. Values for Fupp were calculated following the work done by EWG 24-02, which for both MVS this year resulted in using the empirical linear model prediction. Afterwards those values were checked to assess the probability of SSB being below Blim. In case that probability was smaller than 5% the Fupp values was considered precautionary.

8 Basis of Short-Term Forecasts

The objective of the short term forecast is to provide the best prediction of catch in year Y+1 based on the assessment with final year y-1 and the conditions set to run the forecast. This is then to predict 2 years ahead for a range of catch options based on range of F options. The F option that corresponded to MSY approach is then presented as advice. For stocks fished at rates above FMSY, the catch options table provides fishing opportunities potentially consistent with achieving MSY in 2027.

The short term forecast methodology was reviewed and adjusted by EWG 25-01.

The methodology was applied to the stocks of blue and red shrimp and giant red shrimp (FAO codes ARA and ARS, respectively) with full assessments and reference points.

9 Index based method used for stock without assessments

ICES has updated the index approaches used for stock without analytical assessment using age based or surplus production methods. Accordingly, the EWG has updated the approach applied for stocks in this situation and has implemented two options so far. The full set of methods and their calculations are documented in Section 16.4.11 of the basis for ICES advice “ICES technical guidance for harvest control rules and stock assessments for stocks in categories 2 and 3”. The methods used are described in EWG 24-10.

This year these methods were applied to blue and red shrimp in GSAs 1 and 2 (ARA12), and red mullet in GSA 9 (MUT9).

6.1 List of Annexes

Electronic annexes are published on:
https://stecf.ec.europa.eu/document/64a0214f-4b42-4a4c-8ad4-48e2d8ad3fab

List of electronic annexes documents:

EWG-26-09 – Annex

Annex 1 – Stock Assessment Forms
Annex 2 – Stock objects
Annex 3 – Ad hoc Contract on Fupper

6.2 List of Background Documents

Background documents are published on:
https://stecf.ec.europa.eu/document/64a0214f-4b42-4a4c-8ad4-48e2d8ad3fab

List of background documents:

EWG-26-09– Doc 1 - Declarations of invited and JRC experts (see also the section of this report ‘Contact details of EWG-26-09 participants’)

.

GETTING IN TOUCH WITH THE EU

In person

All over the European Union there are hundreds of Europe Direct centres. You can find the address of the centre nearest you online (european-union.europa.eu/contact-eu/meet-us_en).

On the phone or in writing

Europe Direct is a service that answers your questions about the European Union. You can contact this service:

— by freephone: 00 800 6 7 8 9 10 11 (certain operators may charge for these calls),

— at the following standard number: +32 22999696,

— via the following form: european-union.europa.eu/contact-eu/write-us_en.

FINDING INFORMATION ABOUT THE EU

Online

Information about the European Union in all the official languages of the EU is available on the Europa website (european-union.europa.eu).

EU publications

You can view or order EU publications at op.europa.eu/en/publications. Multiple copies of free publications can be obtained by contacting Europe Direct or your local documentation centre (european-union.europa.eu/contact-eu/meet-us_en).

EU law and related documents

For access to legal information from the EU, including all EU law since 1951 in all the official language versions, go to EUR-Lex (eur-lex.europa.eu).

Open data from the EU

The portal data.europa.eu provides access to open datasets from the EU institutions, bodies and agencies.

STECF

The Scientific, Technical and Economic Committee for Fisheries (STECF) has been established by the European Commission. The STECF is being consulted at regular intervals on matters pertaining to the conservation and management of living aquatic resources, including biological, economic, environmental, social and technical considerations.

Science for policy

The Joint Research Centre (JRC) provides independent, evidence-based knowledge and science, supporting EU policies to positively impact society

EU Science Hub
joint-research-centre.ec.europa.eu

@EU_ScienceHub
EU Science Hub - Joint Research Centre
EU Science, Research and Innovation
EU Science Hub
@eu_science

Publications Office
of the European Union